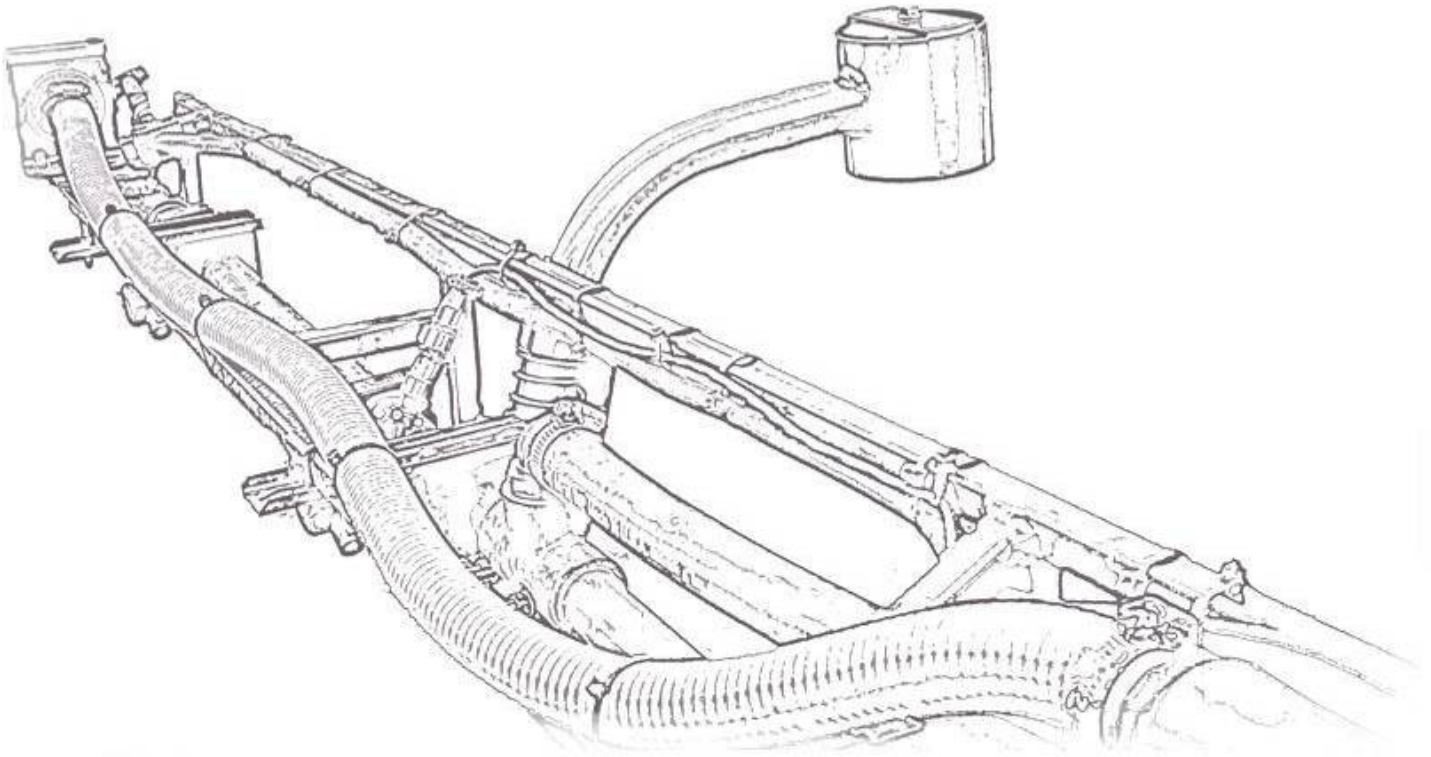




UC4+™ Spray Height Control System
ROLL CONTROL
Patented



HARDI AutoHeight (DAH or DAH09)
Installation Manual

Improving the competitiveness of Industry and Agriculture
through Precision Measurement

Printed in Canada

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Reorder P/N: UC4+BC+HD4-INST Rev G (HARDI AutoHeight)

NOTICE

NORAC Systems International Inc. reserves the right to improve products and their specifications without notice and without the requirement to update products sold previously. Every effort has been made to ensure the accuracy of the information contained in this manual. The technical information in this manual was reviewed at the time of approval for publication.

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1 INTRODUCTION

Congratulations on your purchase of the NORAC UC4+ Spray Height Control System. This system is manufactured with top quality components and is engineered using the latest technology to provide operating features and reliability unmatched for years to come.

When properly used the system can provide protection from sprayer boom damage, improve sprayer efficiency, and ensure chemicals are applied correctly.

Please take the time to read this manual completely before attempting to install the system. A thorough understanding of this manual will ensure that you receive the maximum benefit from the system.

YOUR INPUT CAN HELP MAKE US BETTER! If you find issues or have suggestions regarding the parts list or the installation procedure, please don't hesitate to contact us.

2 GENERAL SYSTEM DESCRIPTION

Figure 1 depicts the general system layout of the UC4+ Spray Height Control System.

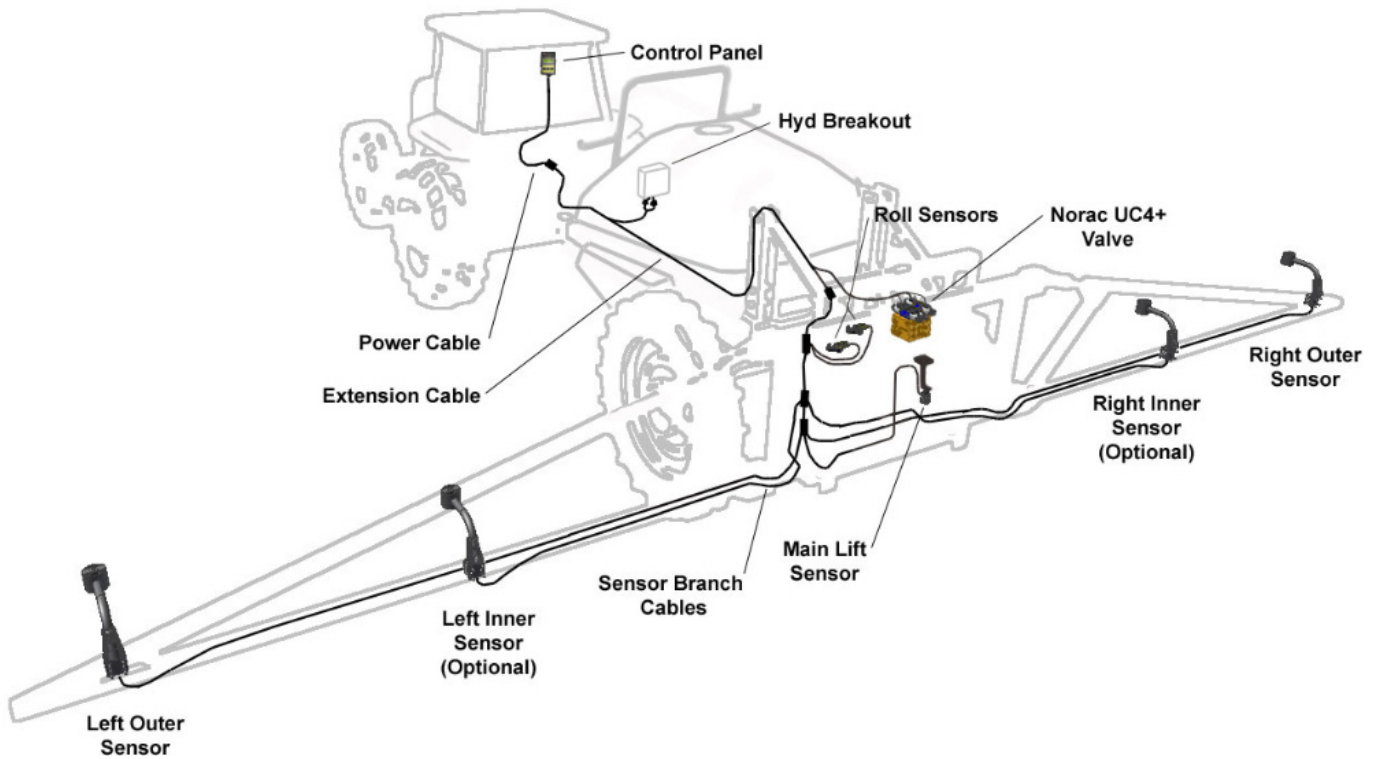


Figure 1: System Components and General Location (COMMANDER and NAVIGATOR)

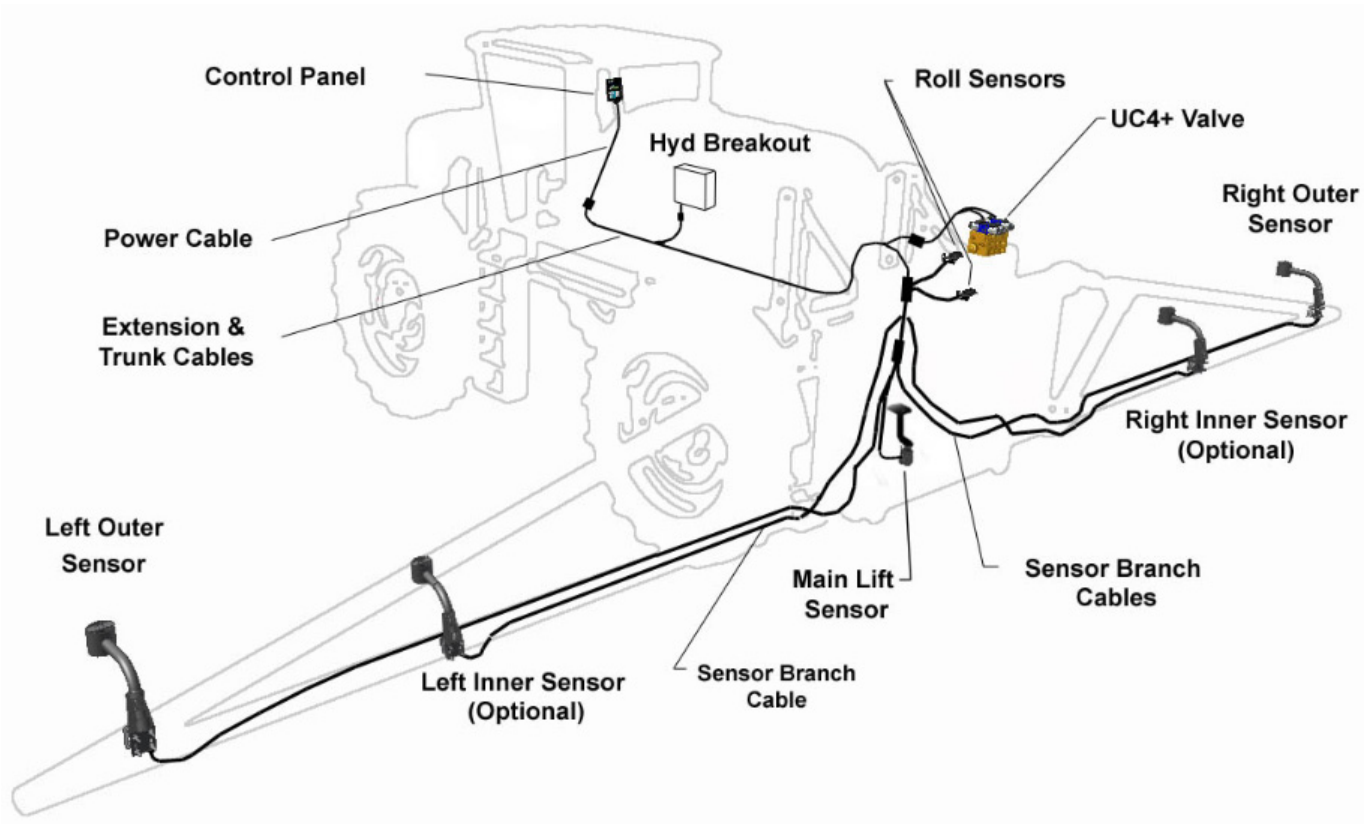


Figure 2: System Components and General Location (ALPHA)

! NOTICE:

Every effort has been made to ensure the accuracy of the information contained in this manual. All parts supplied are selected specially to fit the sprayer to facilitate a complete installation. However, NORAC cannot guarantee all parts fit as intended due to the variations of the sprayer by the manufacturer. **Please read this manual in its entirety before attempting installation.**

! ATTENTION:

When installing the UC4+ Spray Height Control system please be aware that at a point in the installation your sprayer booms will be inoperative until the installation is complete. **Any installation procedure requiring boom movement will need to be done first.** Once the hydraulics have been disconnected you must complete the electrical installation before the booms become operative.

3 PARTS LISTS

The parts that come with your UC4+ Spray Height Control System are listed in **Table I**. The item number on the left side of this table references each part.

3.1 UC4+ PARTS LIST

Please ensure that all parts in your kit are present before proceeding with your installation.

Table I: HD4 Spray Height Control System Parts

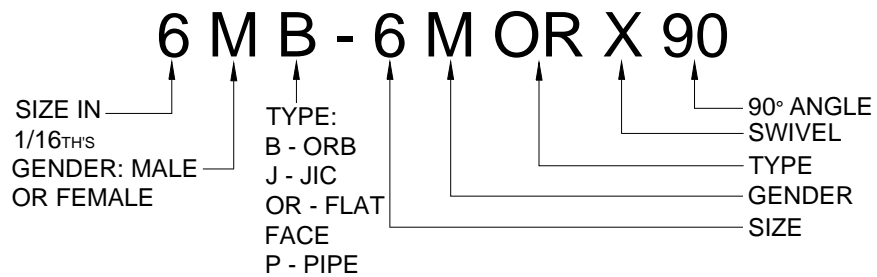
Item	Part Number	Name	Quantity
B06*	105728	RAM-233 RAIL MOUNT ADAPTER KIT FOR RAM-202 BASE	1
B10	44700-06	BRACKET VALVE MOUNTING STD	1
B11	44695-15	MOUNTING BRACKET UC4 SENSOR HARDI COMMANDER ML	1
B13	44728	MOUNTING BRACKET COMPLETE UC4 BREAKAWAY EXTENDED	2
B14	100610	BOLT HEX NC GR5 PLTD 3/8 X 1	4
B15	100947	WASHER LOCK SPRING PLTD 3/8 IN	4
C02	44668	CABLE UC3 SENSOR BRANCH 1 AMP RECEPT 3 AMP PLUG BC	1
C02A	44664	CABLE UC4 CAN NODE DUAL	1
C03	44656	CABLE VALVE VARIABLE RATE	1
C10*	44658-52	CABLE UC4 POWER HARDI	1
C11	44658-50	CABLE UC4 INTERFACE EXTENSION HARDI	1
C12	44658-78	CABLE UC4 INTERFACE HARDI DAH09	1
C12A	44658-51	CABLE UC4 INTERFACE HARDI	1
C13	44782	CONN GP POWER PLUG 6 WAY	1
E01*	4461BC+HD	UC4 PLUS BOOM CONTROL PANEL HARDI	1
E02	44631	UC4 ULTRASOUND SENSOR	3
E03	45000*	UC4 PLUS ROLL SENSOR W TEMPERATURE PROBE VER. 2	1
E04	45001*	UC4 PLUS ROLL SENSOR VER. 2	1
H20	44865-43	HYDRAULICS FITTING KIT - HD4	1
M01	446BC+MAN7	OPERATOR MANUAL UC4+ SPRAY HEIGHT CONTROL	1
M02	102084	TOOL PIN REMOVAL G.P.	1
M10	UC4+BC+HD4-INST	MANUAL INSTALLATION UC4+ HARDI	1
M13*	UC4-BC-HD4-INSTE	MANUAL INSTALLATION END-USER HARDI	1
V01	44963D	VALVE BLOCK ASSEMBLY 2 STATION CC/LS PROP DT 4 BOLT	1

* For systems purchased BEFORE October 1, 2011, the roll sensor part numbers are 44641 and 44642.

Table 2: 44865-43 - Hydraulics Fittings Kit Details

Item	Part Number	Name	Quantity	Picture
F02	501304	COUPLING HYD 6MB 4MBSPP	4	
F03	104369	COUPLING HYD 6MBP	2	
F01	44928	ORIFICE INSERT .047 IN ONE WAY	4	

Fitting Name
Example:



⚠ Important

The use of dielectric grease is not recommended on any NORAC electrical connections.

⚠ Important

To ensure all stainless steel hardware does not gall or seize apply a light coating of the supplied Permatex Anti-seize grease to all threaded parts upon installation. Permatex Anti-seize lubricant is preferred, but other similar anti-seize products may be used.

3.2 HARDI PARTS LISTS

The required HARDI Parts necessary for the UC4+ install are listed in Table 3.


Table 3: HARDI Parts

Item	Part Number	Name	Quantity
HARDI01	232109	1/4" BSP FITTING	4
HARDI02	784030	4FBSP-4FBSP HYD HOSE (350MM LENGTH)	2
HARDI03	784022	4FBSP-4FBSP HYD HOSE (650MM LENGTH)	2
HARDI04	262126	LIQUIDTIGHT CONNECTOR	1
HARDI05	262107	LIQUIDTIGHT CONNECTOR NUT	1
HARDI06	284846	CABLE TIES	175

 **Item HARDI04 and HARDI05 are only required when using the 44658-51 (C12A) interface harness.**

Table 4: HARDI Parts for Aluminum (Round) Booms

Item	Part Number	Name	Quantity
HARDI07	-----	ROUND TUBE CLAMPS FOR MOUNTING TO ALUMINUM BOOMS	4

 **Items numbers followed with an asterisks are to be delivered to the sprayer End-User. These parts require installation to the tractor unit in accordance to the accompanied documentation.**

The parts that come with your UC4+ System are shown below in their general installation configuration.

! Cables C12A and C13 may be used in place of Cable C12 in some installations. See **Section 4.10** for details.

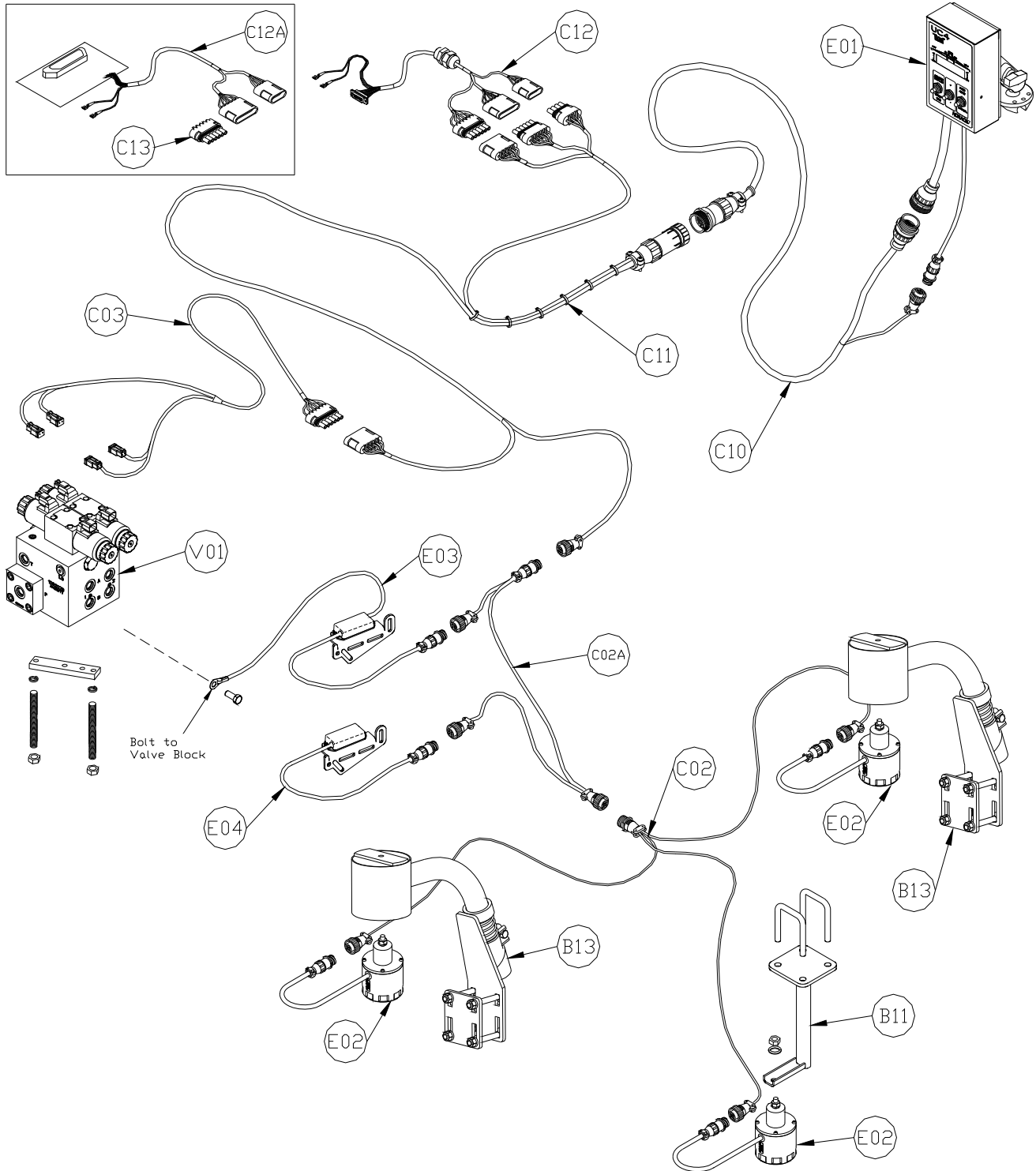


Figure 3: UC4+ Spray Height Control Components

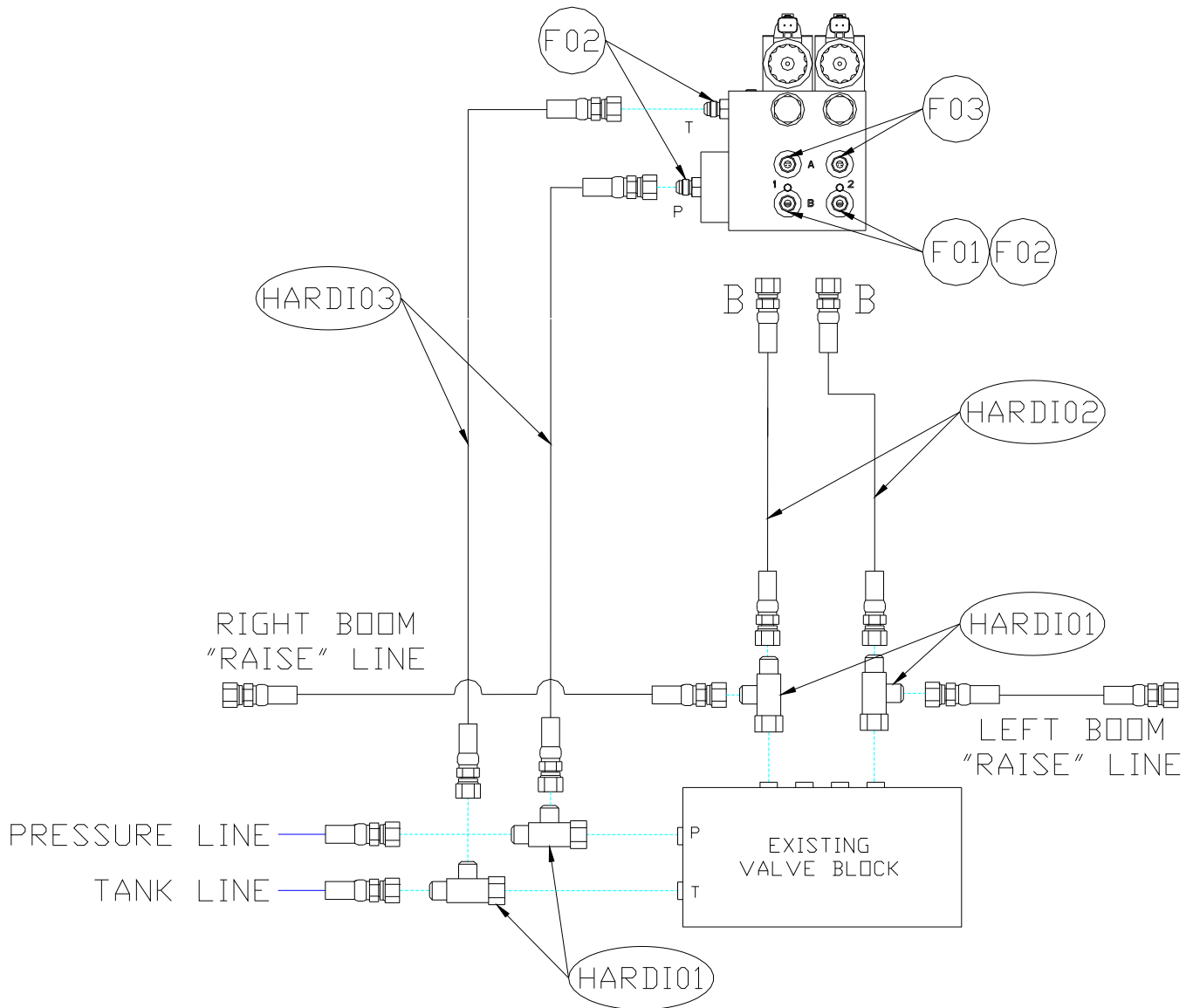


Figure 4: Hydraulic Plumbing Schematic

4 INSTALLATION PROCEDURE

4.1 FUNCTIONALITY CHECK

Before beginning the install, ensure all hydraulic boom functions are operating properly on the sprayer.

- All Fold Functions
- Main Lift Function
- Wing Tilt Functions
- Slant Function

4.2 EXISTING SYSTEM CHECK

- Inspect slide pads and wear surfaces for excessive wear. Replace or adjust if necessary.
- Ensure the boom guide-rods are set to the “tapered” position (factory setting)
- Set boom suspension to be critically damped (Figure 5). Adjust the boom damper accordingly.
 - A) Unlock the pendulum, and push boom tip down approximately 75 cm (30 inches).
 - B) Hold the boom steady for a moment, and release.
 - C) Ensure the boom returns to its relaxed state as quickly as possible, with little to no overshoot.

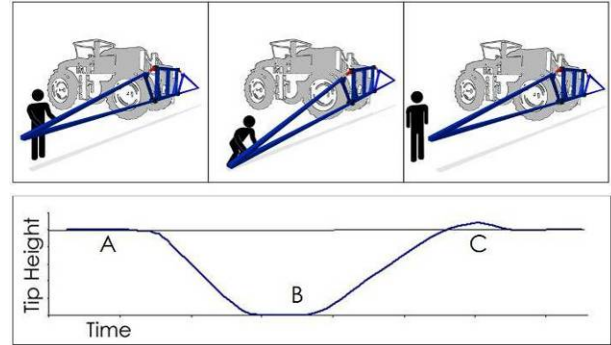


Figure 5: Boom Push Test- Critically Damped

4.3 WING SENSOR INSTALLATION

1. Assemble the Breakaway Sensor Mounting Brackets (**B13**) as show in **Figure 6** and **Figure 7**.

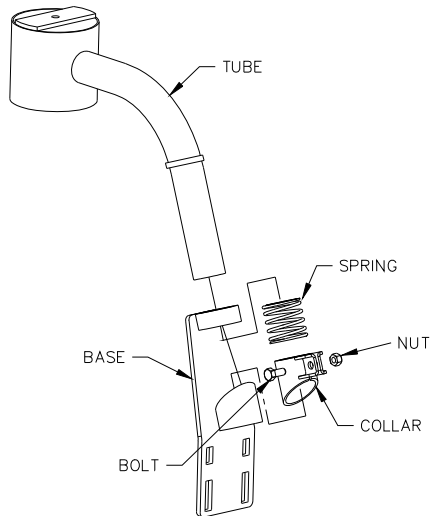


Figure 6: Breakaway Sensor Bracket Exploded View

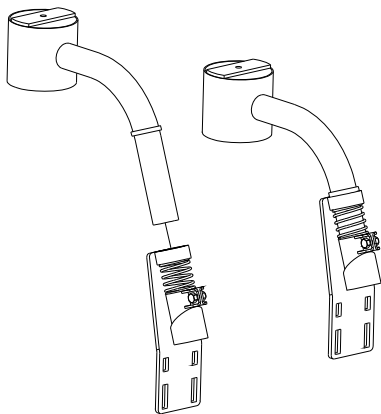


Figure 7: Breakaway Sensor Mounting Bracket Assembly

To assemble the breakaway sensor bracket:

- a) Assemble the bolt and nut into the collar.
- b) Grease the bottom edge of the collar and the angled tube of the base.
- c) Place the collar onto the angled tube of the mounting base.

- d) Install the spring between the collar and the upper ring of the base.
- e) Insert tube through assembly and tighten the collar

2. Mount the sensor bracket onto the boom.

! If possible, mount the sensor brackets while the booms are in their folded position to ensure that they will not interfere with anything when the boom is folded for transport.

3. The sensor mounting brackets can be installed with the mounting base behind (**Figure 10**) or in front of the tube (**Figure 8**).

! Mounting the sensor bracket to the break-away section of the boom may cause the boom to drop suddenly as a break-away occurs. This will occur on break-away sections which lift as they break away.

! For optimal boom tip protection, it is recommended that the sensor be mounted within approximately two feet (60cm) of the boom tip.

Please refer to the UC4+ Spray Height Control system warranty at the end of the **UC4+ Spray Height Control Operator's Manual (M01)** for implications.

4. Mount the NORAC UC4+ ultrasonic sensor (**E02**) into the sensor brackets. The sensors should be oriented forward (ahead) of the boom (see **Figure 8** and **Figure 10**).

! When installing the UC4+ sensors (**E02**), start with the smallest serial number on the left hand side

proceeding to the largest serial number on the right hand side (Figure 14).

5. Sensor cables should run through the mounting bracket tube and then behind the member the bracket is mounted onto. Cable-tie the connector in place. The cable must not be allowed to hang below the boom (Figure 8).

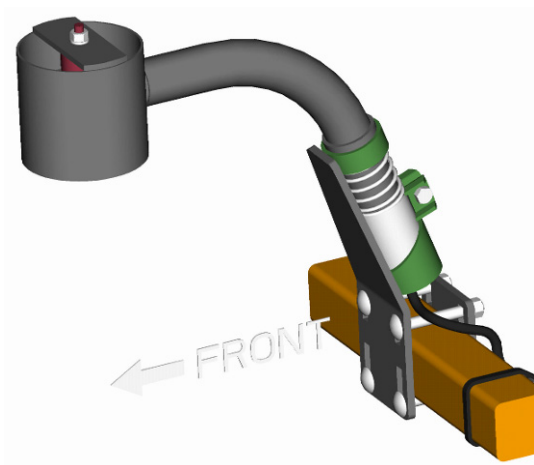


Figure 8: Another Acceptable Mounting

- !** Avoid mounting sensors in locations where they may read from parts of the boom as shown in Figure 9.

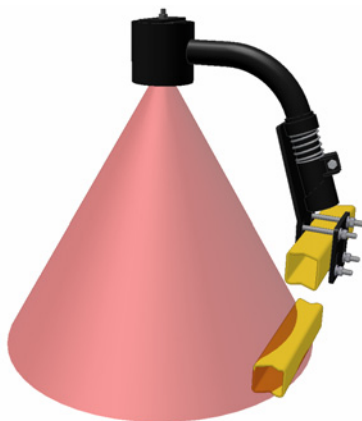


Figure 9: Poor Mounting (Sensor Reading Off Boom)

General mounting rules for UC4+ ultrasonic wing sensors:

- a) In its lowest position, the sensor mouth must be 9 inches or more from the ground.
- b) The bottom of the sensor must be at least 9 inches in front of the spray nozzles.
- c) The bottom of the sensor must be at least 9 inches above the spray nozzles.
- d) Ensure that there are no obstructions within a 12-inch diameter circle projected directly below the center of the sensor.
- e) The sensor should be approximately vertical at normal operating heights.

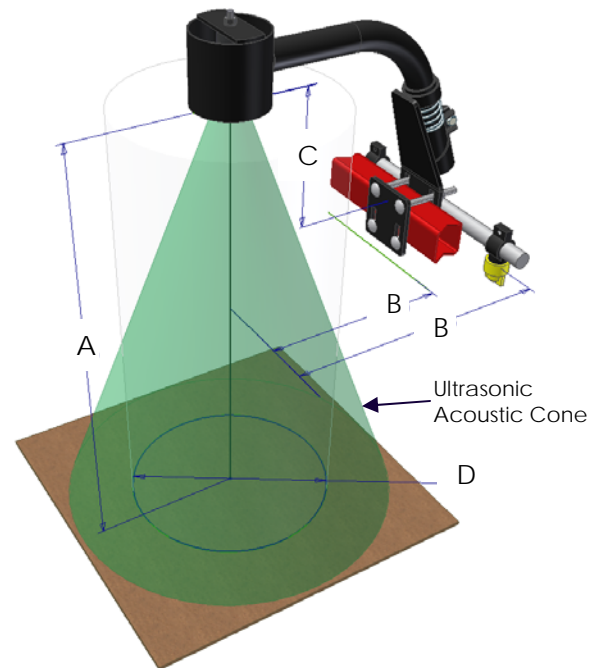


Figure 10: Sensor Mounting Guidelines

4.3.1 Suggested Mounting for the Wing Bracket on HPZ(24-36m) /HAZ (18-30m)

Below is the suggested mounting location for the brackets on the HPZ (24-36m) or HAZ (18-30m) booms. Mounting location is just inside of the boom break-away section (A).

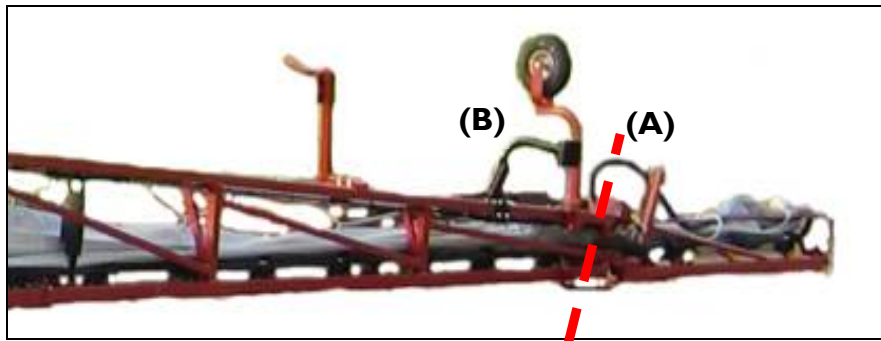


Figure 11: Suggested Bracket Mounting Location (viewed from front) on 24m HAZ

! IMPORTANT:

Avoid mounting the bracket too close to the touch-down wheel (B).

4.3.2 Suggested Mounting for the Wing Bracket on HAZ (32-36m) Boom

Below is the suggested mounting location for the brackets on the HAZ 32-36m booms. Mounting location is just inside of the boom break-away section (A).

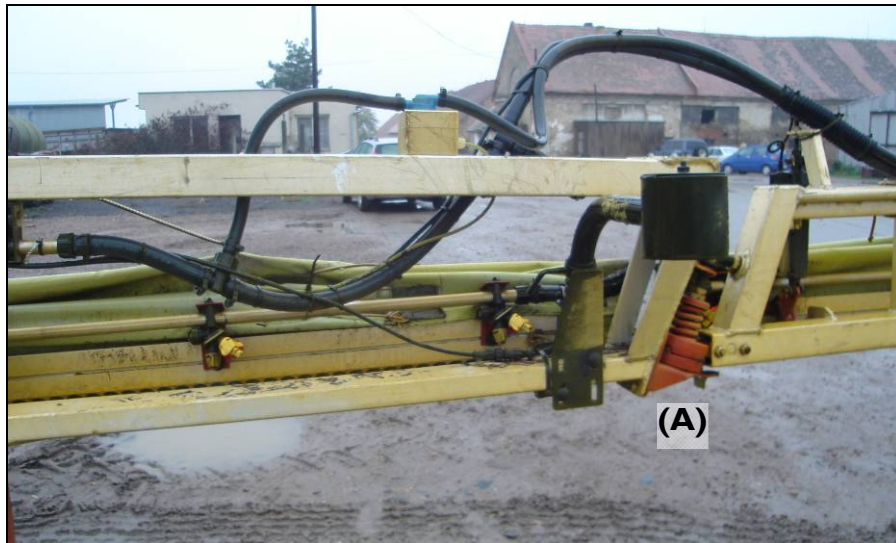


Figure 12: Suggested Bracket Mounting Location (viewed from front) on 36m HAZ

4.3.3 Suggested Mounting for the Wing Bracket on LPZ

Below is the suggested mounting location for the brackets on the LPZ boom. Mounting location is just inside of the boom break-away section (A).

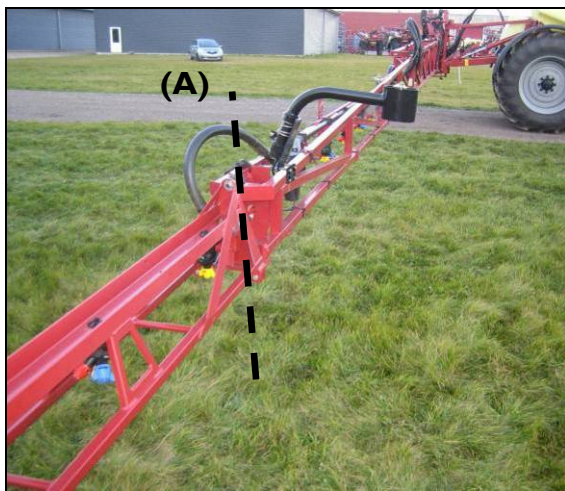
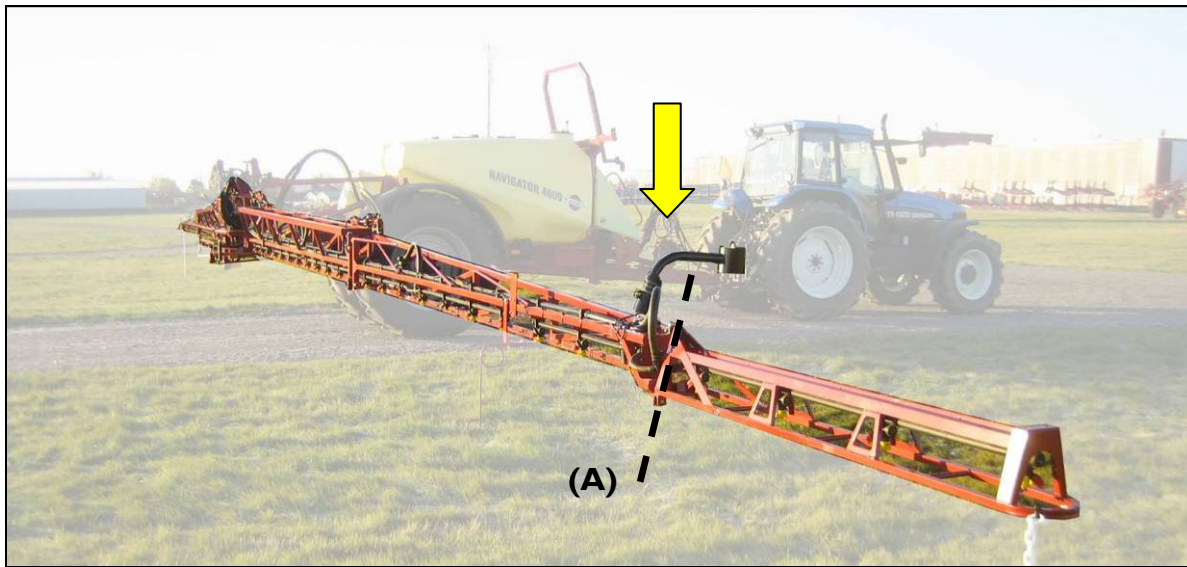


Figure 13: Suggested Bracket Mounting Location on LPZ Boom

When arranging height sensors, install the serial numbers from lowest to highest, left to right.

Apply a light coating of the supplied Permatex Anti-seize grease to all threaded parts upon installation.

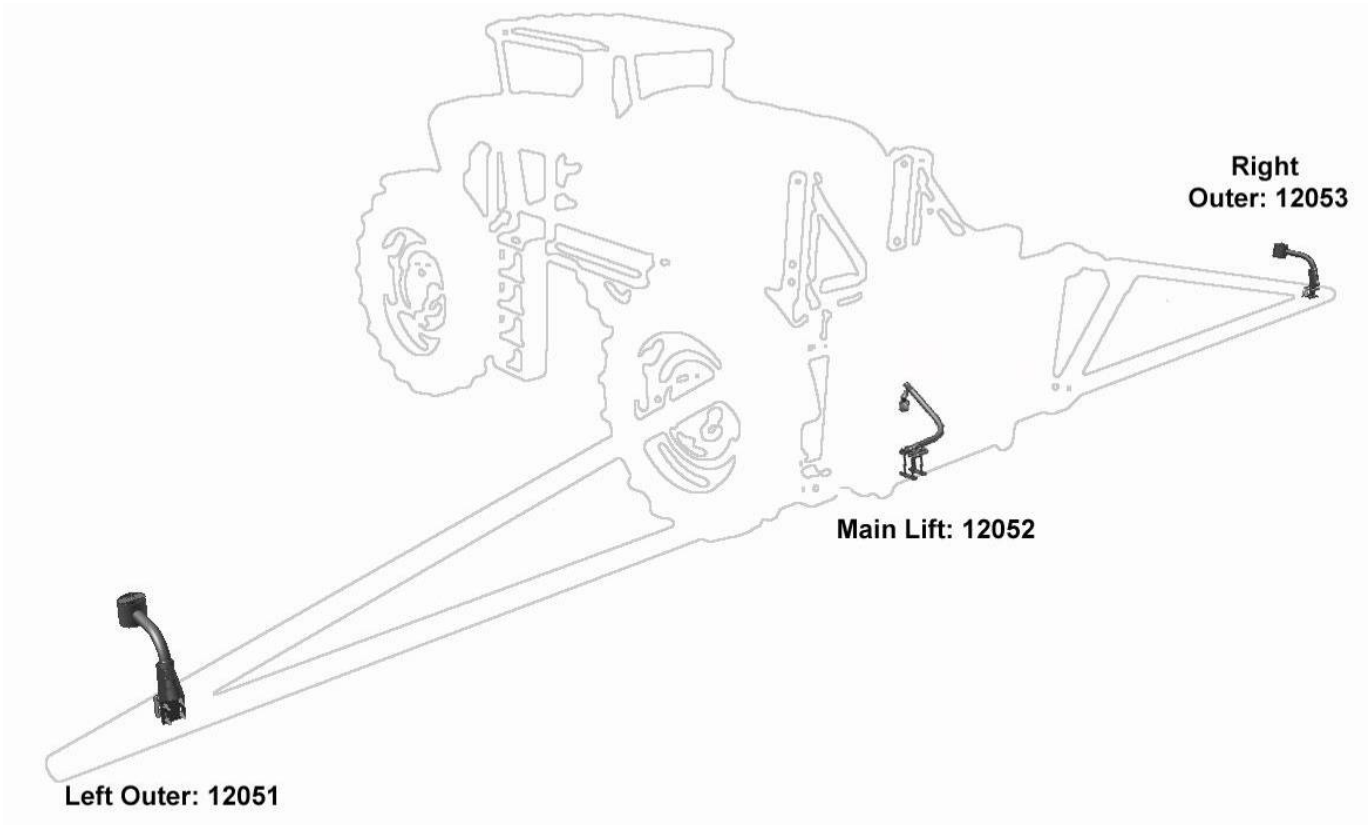


Figure 14: Sensor Serial Number Installation Location (example)

4.4 MAIN LIFT SENSOR INSTALLATION

! The **General Mounting Rules for UC4+ Ultrasonic Sensors** (Section 4.3), must also be followed for the **Main Lift sensor**.

4.4.1 FORCE / TWIN FORCE (HPZ/ HAZ)

1. Mount the main lift bracket (**B11**) as illustrated in **Figure 15**. Ensure sensor cable is routed properly and securely fastened.
2. Mount the Ultrasonic sensor to the bracket. Ensure the sensor has a clear view of the ground. Ensure sensor cable is securely fastened with cable-ties.

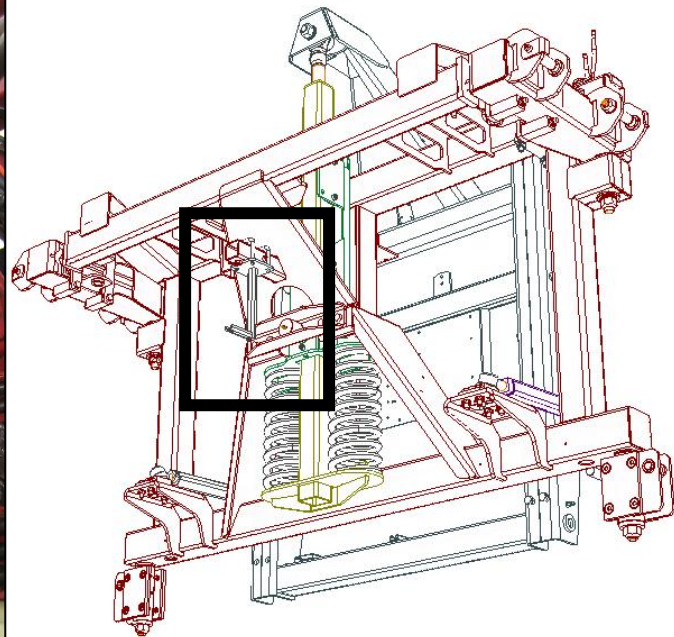
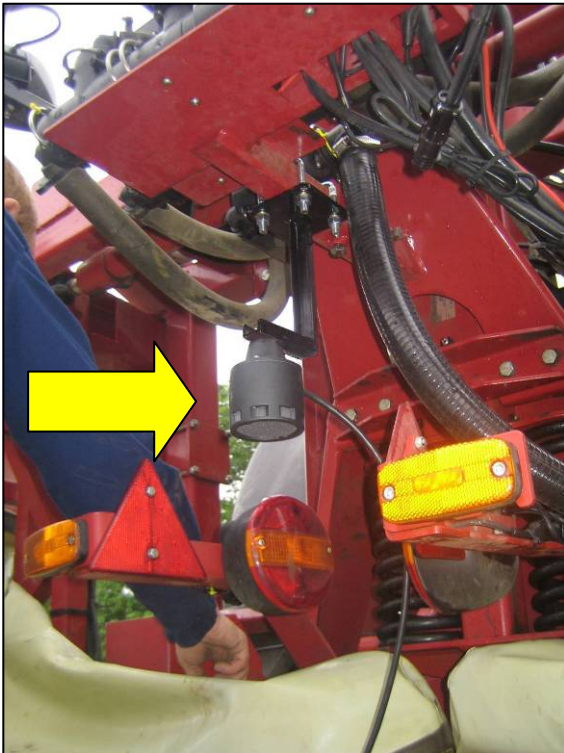


Figure 15: Main Lift Sensor Mounted to the HPZ/HAZ Center-Part

4.4.2 DELTA (LPZ)

No mounting bracket is required. Mount the main lift sensor as illustrated in **Figure 16**. Ensure sensor cable is securely fastened with cable ties.

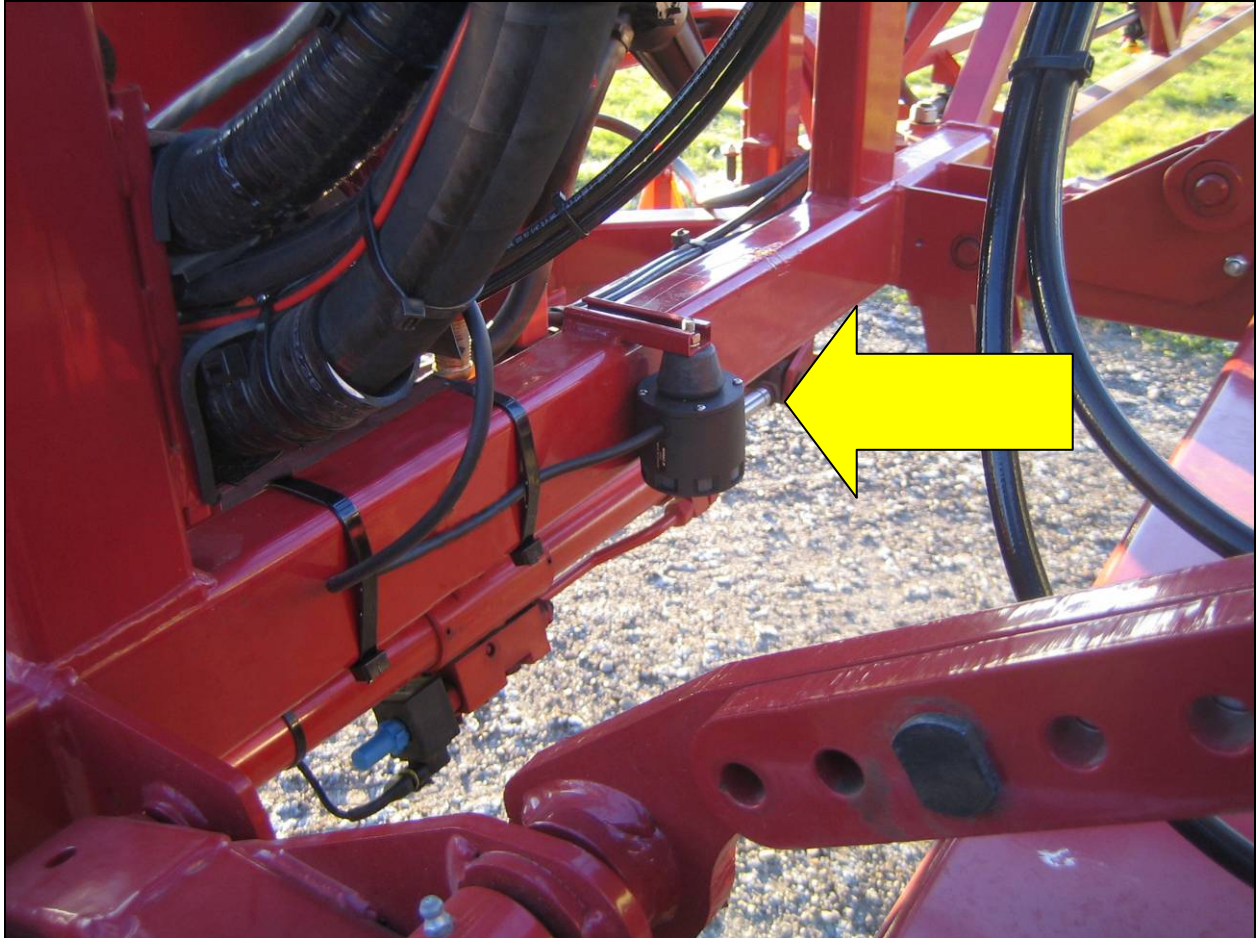


Figure 16: Main Lift Sensor Mounting on LPZ Center-Part

4.5 ROLL SENSOR INSTALLATION

Mount the roll sensors to the included roll sensor brackets using the machine screws and nylon lock nuts, as illustrated in **Figure 17**.

! Ensure roll sensor assemblies are oriented as shown in **Figure 18** with the cable exiting towards the right-hand wing.

! The roll sensors must be mounted tightly to the brackets.

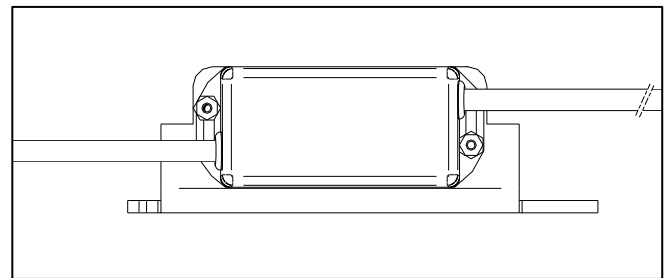
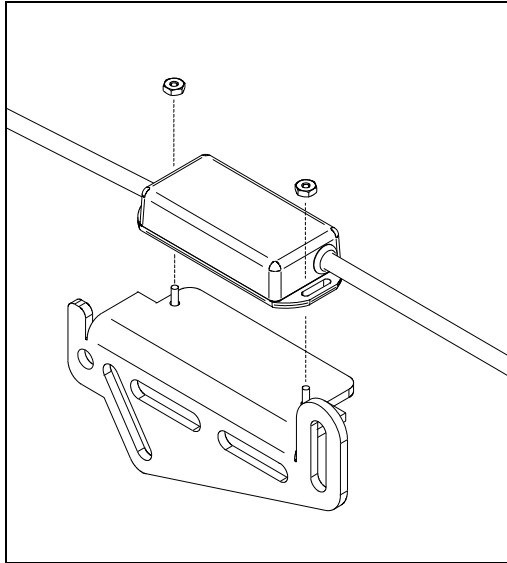


Figure 17: Mounting the Roll Sensor to the Roll Sensor Mounting Bracket

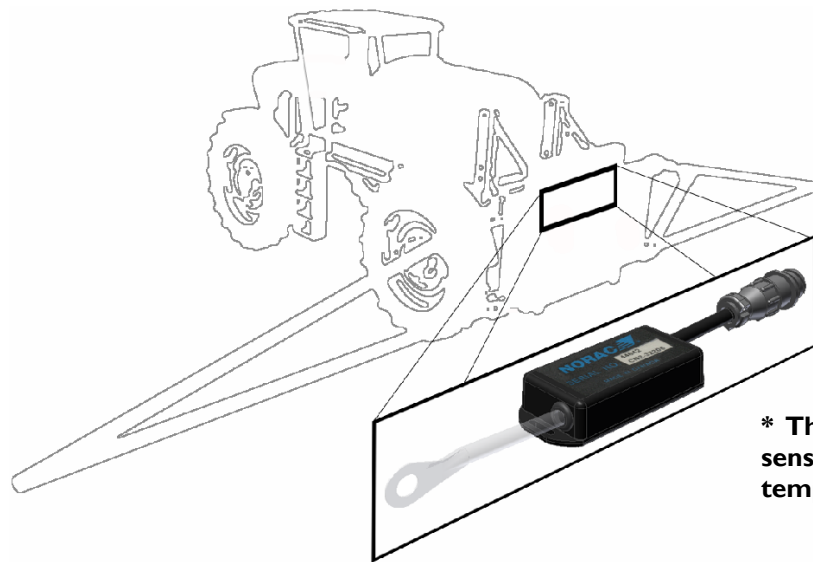


Figure 18: Roll Sensor Mounting with Respect to Sprayer Orientation

4.5.1 FORCE / TWIN FORCE (HPZI HAZ)

Mount the Boom Roll Sensor (**E04**) to the boom center section, as illustrated below. Ensure the circular connector is pointing towards the right hand wing (when looking from the rear of the sprayer). Fasten with cable ties.

- Item E03 (has temperature probe) is attached to the non-rotating part of the boom.
- Item E04 is attached to the rotating part of the boom.

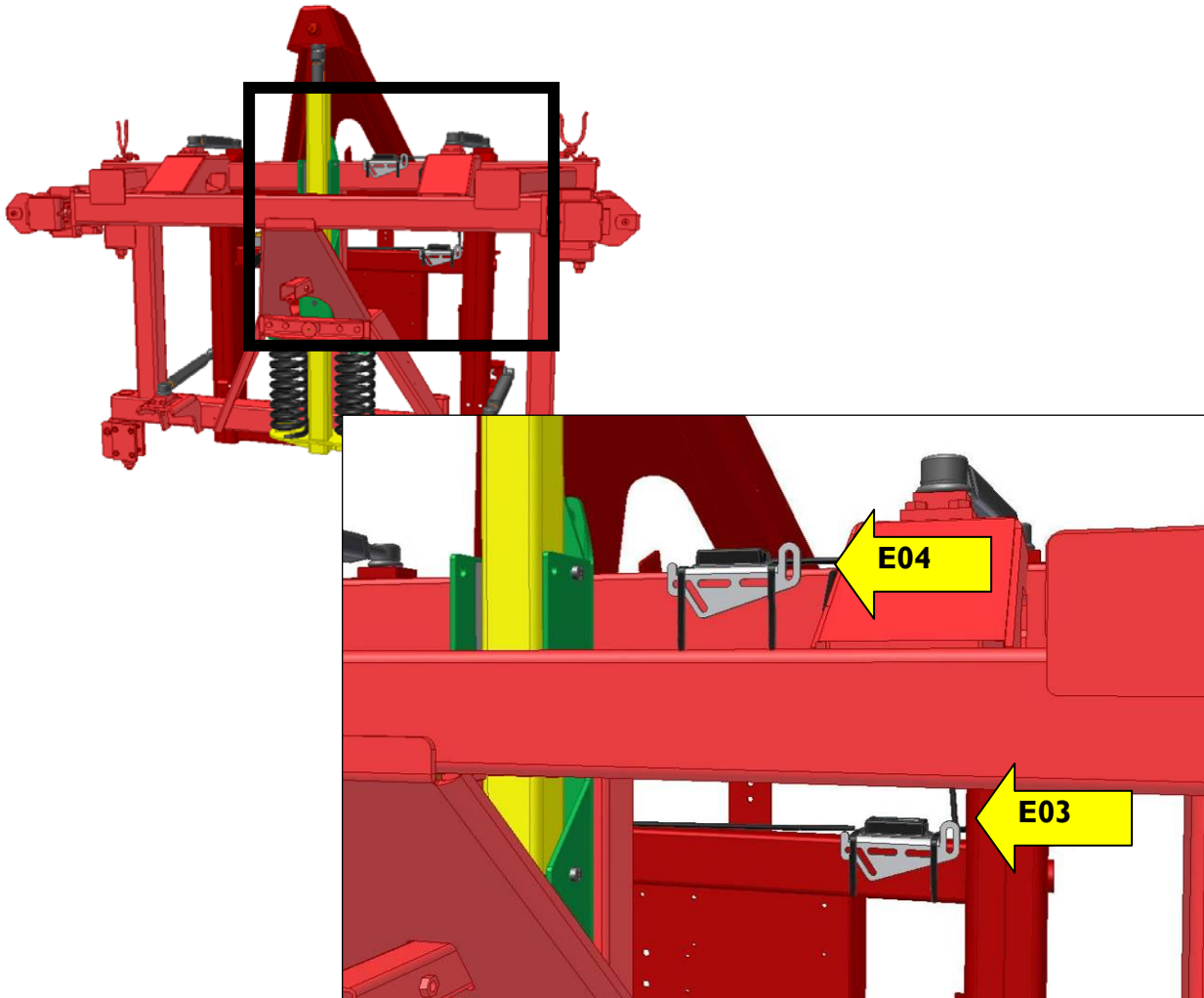


Figure 19: Boom Roll Sensor Mounting (viewed from rear of sprayer)

4.5.2 DELTA (LPZ)

Mount the Boom Roll Sensor (**E04**) to the boom center section, as illustrated below. Ensure the circular connector is pointing towards the right hand wing (when looking from the rear of the sprayer). Fasten with cable ties.

- Item E03 (has temperature probe) is attached to the non-rotating part of the boom.
- Item E04 is attached to the rotating part of the boom.



Figure 20: Boom Roll Sensor Mounting (viewed from rear of sprayer)

4.6 TEMPERATURE PROBE

Once the block is mounted, fasten the temperature probe (**E03**) to the UC4 valve block using the included 3/8x1/2" bolt as illustrated in **Figure 21**.



Figure 21: UC4+ Valve Block with Temperature Probe Installed

4.7 HYDRAULIC INSTALLATION

WARNING!

The hydraulic system creates very high pressure. Before disconnecting any hydraulic lines ensure all pressure has been bled from the system. When changing the boom hydraulic hoses leave the booms in **TRANSPORT POSITION**.

IMPORTANT:

Component failure due to oil contamination is not covered under the UC4+ Spray Height Control system warranty. It is recommended that a qualified technician does the hydraulic installation.

1. Refer to **Figure 22**. On a clean surface remove the plastic plugs from the “A”, “B”, “P”, and “T” ports of the NORAC hydraulic valve (**V01**). Install the 6MB-4MBSPP fittings (**F02**) on the “P” and “T” ports and tighten to 18 ft-lbs.
2. Install the orifices (**F01**) into the “B” ports **with the notch facing outward** as shown in **Figure 23**. An O-ring pick can be used to ease installing the orifices into their locations.
3. Install the 6MB-4MBSP fittings (**F02**) into the “B” ports and tighten to 18 ft-lbs.
4. Install the 6MBP plugs (**F03**) into the “A” ports and tighten to 18 ft-lbs.

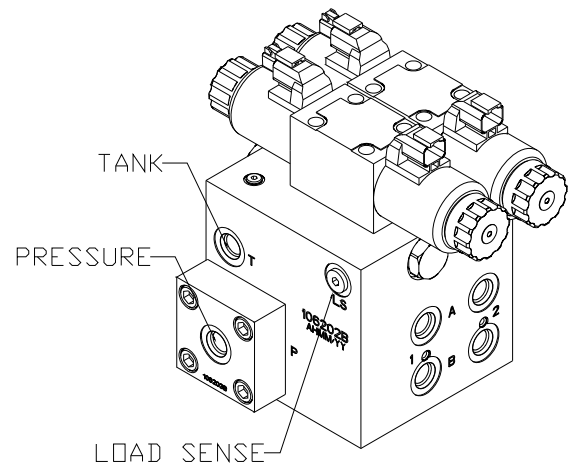


Figure 22: UC4+ Valve Block Ports

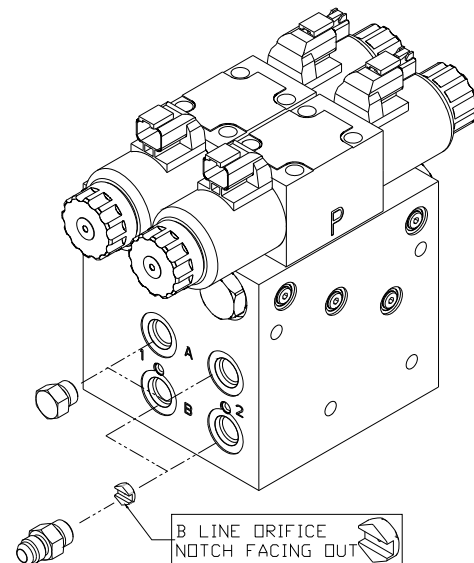


Figure 23: Valve Block Port Assembly

4.8 HARDI VALVE MOUNTING

4.8.1 FORCE/TWIN FORCE (HPZ / HAZ)

Mount the Valve block using the mounting plate and hardware as illustrated. Suggested mounting location on the HPZ / HAZ center-part is shown in **Figure 24**.

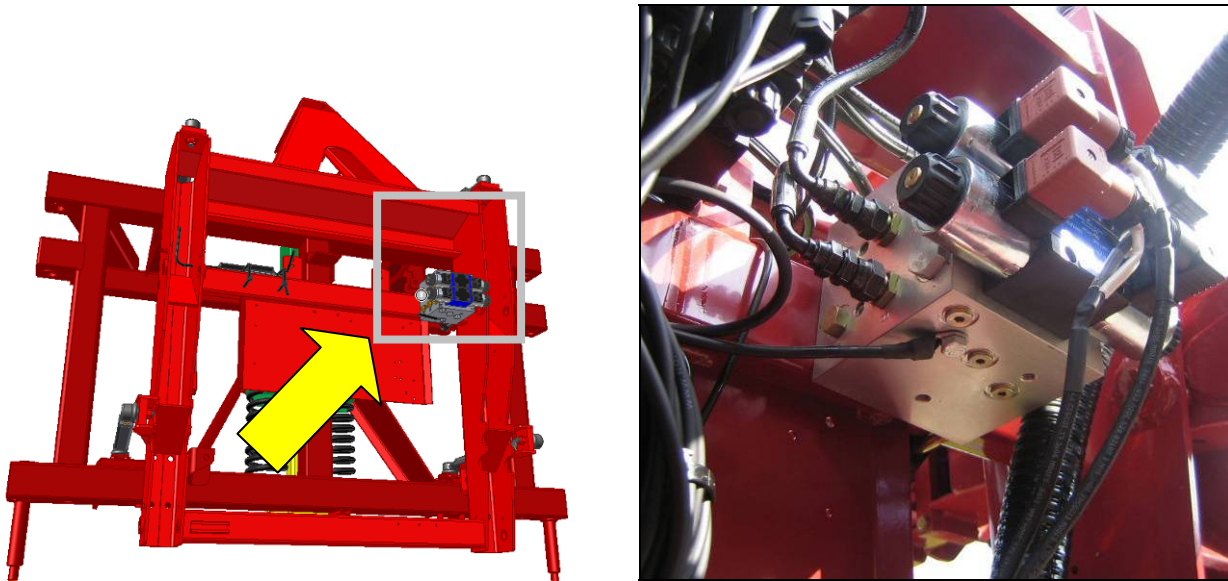


Figure 24: Valve Mounting on HPZ / HAZ

4.8.2 DELTA (LPZ)

Mount the block as illustrated in **Figure 26**. This will require drilling holes through the sheet-metal on the boom. Use Item B14 and B15 (do not use Item B10 mounting hardware).



Figure 25: Valve Block Mounting Location on LPZ



Figure 26: Valve Block Mounted on LPZ

Use the dimensioned drawing below as a guide for drilling the valve block mounting holes for the LPZ boom. Drill holes large enough to accommodate 3/8" bolts.

Y = 111.1mm (4.375 in)

X = 82.5mm (3.25 in)

See Section 7 for a drilling stencil.

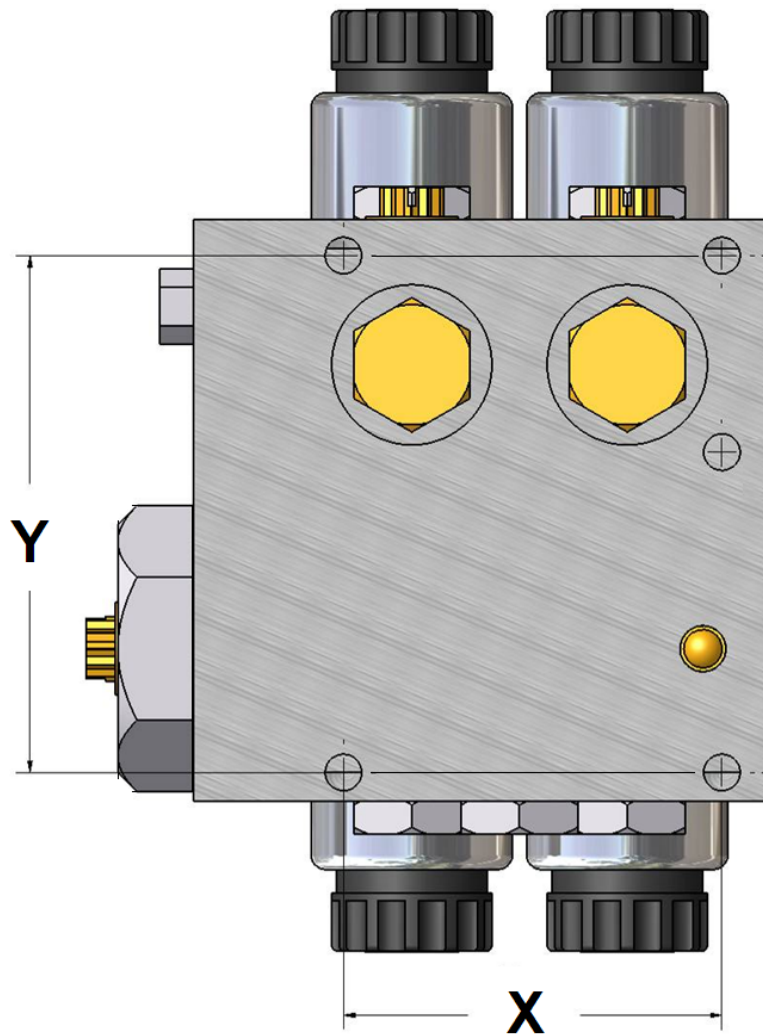


Figure 27: NORAC Valve Block Mounting Hole Dimensions

4.9 HYDRAULIC PLUMBING

WARNING!

From this point in the installation the booms will be inoperative until the electronics are fully installed.

After the valves are mounted on the sprayer, the hydraulic hoses and fittings can be installed (plumbed). Refer to **Figure 4**.

1. Put HARDI01 fittings over the “P”, “T”, and “B” port fittings (installed in the block in **Section 4.8**).
2. Connect pressure and tank lines between the HARDI block and the NORAC block.
 - a. Install tee fittings (**HARDI01**) between the pressure and tank ports on the existing valve block and the respective lines.
 - b. Connect hoses (**HARDI03**) from the tee fittings to the pressure (“P”) and tank (“T”) ports on the NORAC block.
3. The wing tilt “raise” must be connected to the “B” ports of the NORAC block in parallel with the existing HARDI valve block.
 - a. Connect tee fittings (**HARDI01**) between the HARDI block and the HARDI wing tilt lines.
 - b. Connect the “B” ports of the NORAC block to the wing raise lines by connecting HARDI02 between the “B” ports and the tee fittings installed in the HARDI block.
 - c. The “A” ports on the NORAC block are plugged. The “lower” lines of the cylinders are to remain attached to the HARDI sprayer valve block.

4.10 ELECTRICAL INSTALLATION

Ensure the UC4+ Control Panel is OFF for the remainder of the installation (Bottom of switch pressed IN). Use caution when handling the 12 V power line of the sprayer wiring.

⚠ Depending on the electronics used on the sprayer (DAH or DAH09), either the NORAC part 44658-51 or 44658-78 will be required for this installation. For installations using 44658-51, proceed to section 4.10.1. For installations using the 44658-78 proceed to section 4.10.2.

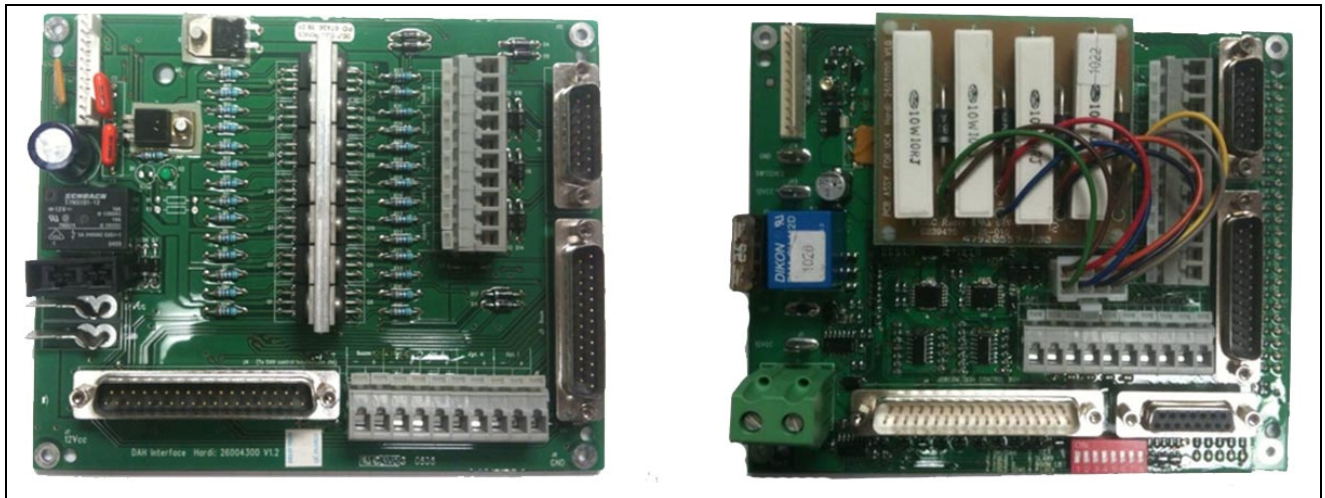


Figure 28: HARDI DAH on Left (use 44658-51) vs. DAH09 on Right (use 44658-78)

4.10.1 General Installation Instructions using the 44658-51

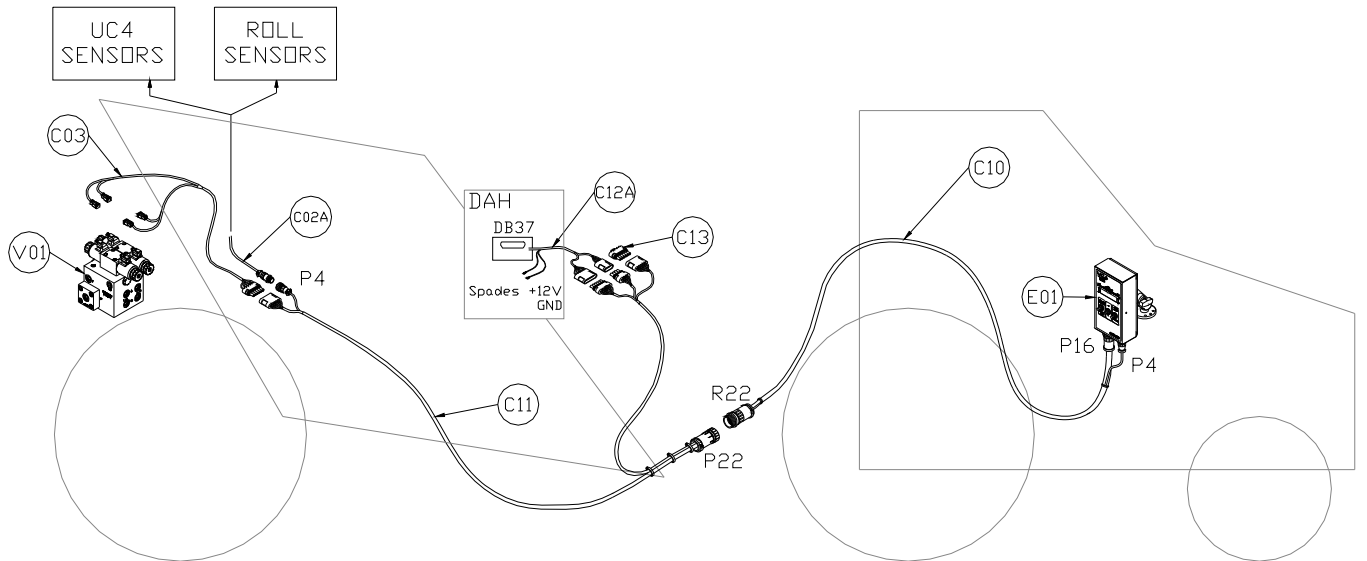


Figure 29: Cable Routing Overview (Using 44658-51)

1. Connect the UC4 power cable (**C10**) to the UC4+ Control Panel in the cab. Ensure that both plugs (**P16** and **P4**) are connected to the panel.
 2. Route the 22-pin AMP receptacle (**R22**) of **C10** to the exterior of the cab.
 3. Connect the 22-pin AMP plug (P22) of the extension cable (C11) to R22 of C10. Connect at the hitch. This connection will provide your hitch disconnect.
 4. Run cable C11 from the hitch to the rear of the sprayer.
 5. Install the sensor branch cable (**C02**) along the boom between the ultrasonic sensors. Be sure to route the cable through the boom to avoid damage to the cable during field operation or boom folding. Connect cable C02 to cable C02A. Connect cable C02A to cable C11.
 6. Route the 6-pin and 4-pin tower connectors (**T6** and **T4**) of **C11** in the vicinity of the Job-com box.
- ⚠ Ensure power to the Job-com is turned off.**
7. If the sprayer uses one forward/reverse valve and a number of cartridge valves (HARDI DH) turn ON the DIP switch of **C12A** (Figure 30). Otherwise leave the switches OFF (HARDI DAH). There is denotation on the switch. Turn BOTH switches either ON or OFF.

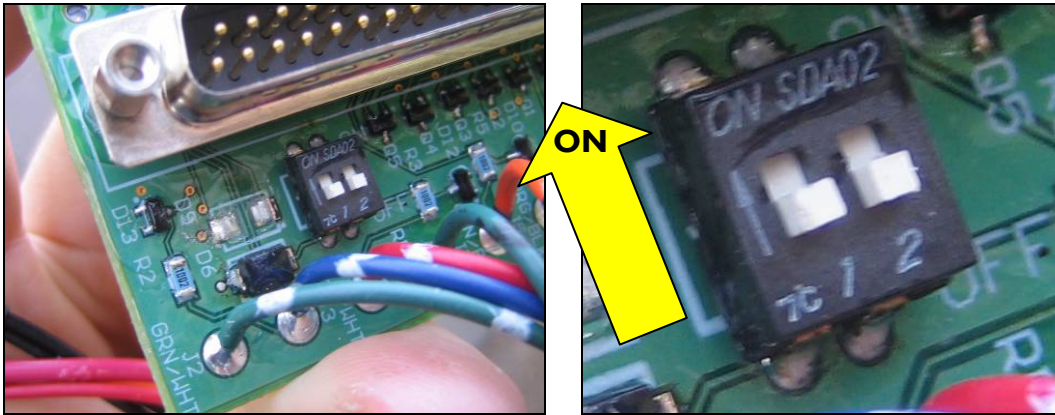
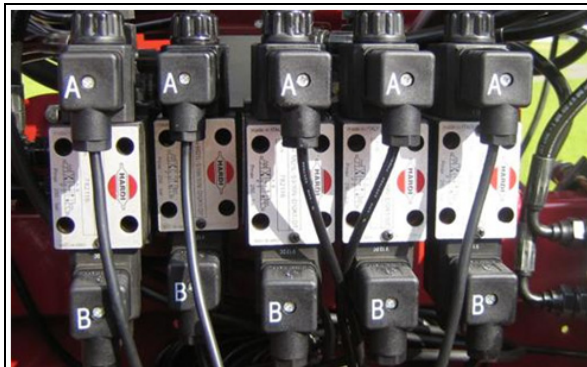


Figure 30: 44658-51 Interface Board Configuration Switch



DAH (leave switches OFF)



DH (turn switches ON)

Figure 31: DAH valve (left) and DH valve (right)

⚠ If the switch is not turned on for DH hydraulics, the boom slant will not function.

8. Connect the NORAC C12A between the J4 connection on the HARDI PCB and the blue wiring harness.
 - a) Remove the blue harness from J4 (37-pin DB male socket) on the PCB inside of the Job-com.
 - b) Insert the 37-pin DB female socket on the PCB of the interface cable (**C12A**) into **J4**. Screw it down to **J4**. This requires removing the small nuts on the DB-37 connector.
 - c) Insert the blue-wire harness into the 37-

pin DB male socket on the other side of the PCB of **C12A**. Screw it down to the socket.

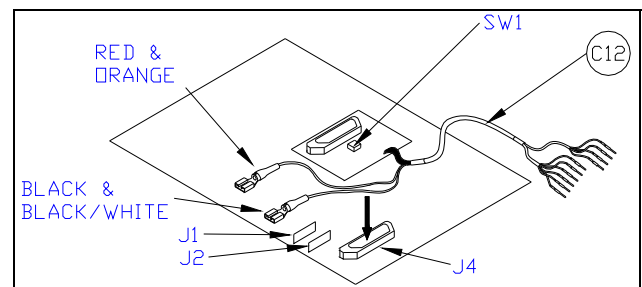



Figure 32: J1, J2 and J4 on HARDI DAH Board

⚠ Do not connect spade connectors to J1&J2 until step 9.

9. Run the free end of **C12A** through an unused hole of the electronics enclosure. This requires installing the Liquidtight connector (Pt. HARDI04, HARDI05) BEFORE proceeding to step 8.
10. Put pins of C12A to the 6-pin and 4-pin Weatherpack connectors (S6 and S4) which are included in this kit according to the table below. One connector on harness C11 may be unused. Seal the unused connector with a 6-pin Weatherpack plug (using C13).

 **The wire colors and the pin-out are the same as ones on the mating connectors (T6 and T4) of the extension cable (C11).**

Connector	Denotation	Wire Color
S6	A	BLUE/WHITE
	B	GREEN/WHITE
	C	BLUE
	D	ORANGE/BLCK
	E*	RED/WHITE
	F*	GREEN/BLACK
S4	A	RED
	B	ORANGE
	C	BLACK
	D	BLACK/WHITE

4.10.2 General Installation Instructions using the 44658-78



Ensure sprayer power is turned off.

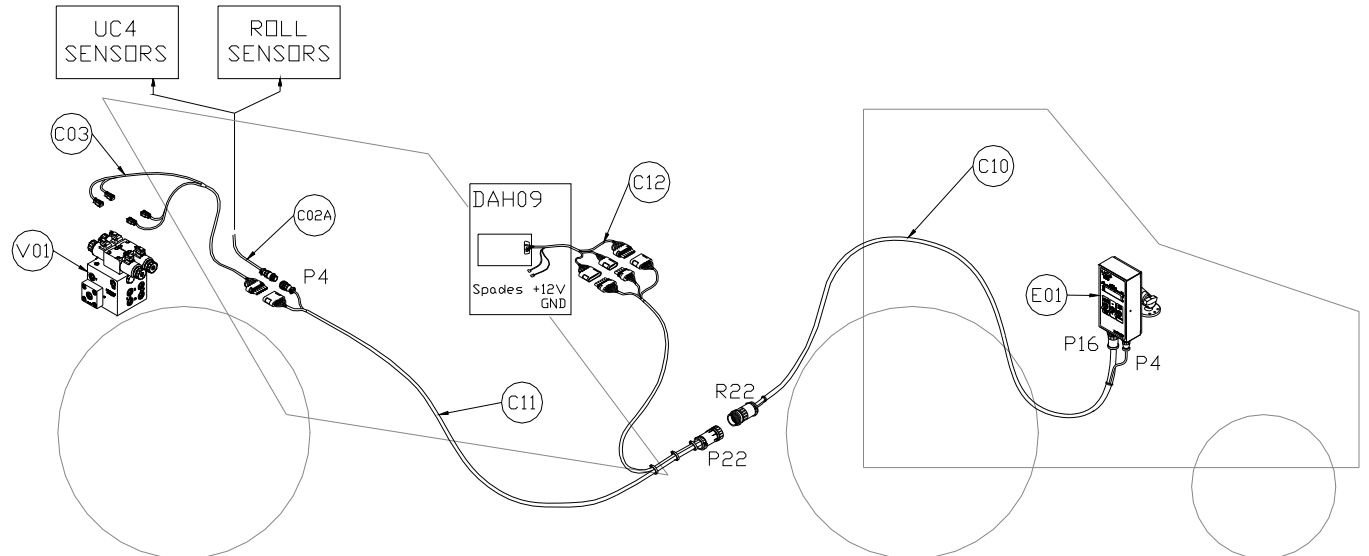


Figure 33: Cable Routing Overview (Using 44658-78)

1. Connect the UC4 power cable (**C10**) to the UC4+ Control Panel in the cab. Ensure that both plugs (**P16** and **P4**) are connected to the panel.
2. Route the 22-pin AMP receptacle (**R22**) of C10 to the exterior of the cab.
3. Connect the 22-pin AMP plug (**P22**) of the extension cable (**C11**) to R22 of C10. Position this connection near the hitch. This will provide the hitch disconnect.
4. Run cable C11 from the hitch to the rear of the sprayer.
5. Install the sensor branch cable (**C02**) along the boom between the ultrasonic sensors. Be sure to route the cable through the boom to avoid damage to the cable during field operation or boom folding. Connect cable C02 to cable C02A. Connect cable C02A to cable C11.
6. Connect T4, T6 and S6 of cable C11 to S4, S6 and T6 of cable C12 respectively.
7. Run the DB15 connector and the wires with the spade connectors of C12 to the DAH 09 PCB by passing it through a hole in the enclosure. Seal the hole using the weather-proof strain relief fitting.
8. Connect the DB15 connector of cable C12 to the DAH09 DB15 connector.
9. Connect the red wire with spade connector on C12 to the Switched 12VCC on the DAH09 board (**Figure 34**).
10. Connect the black wire with spade connector on C12 to the GND on the DAH09 board (**Figure 34**).

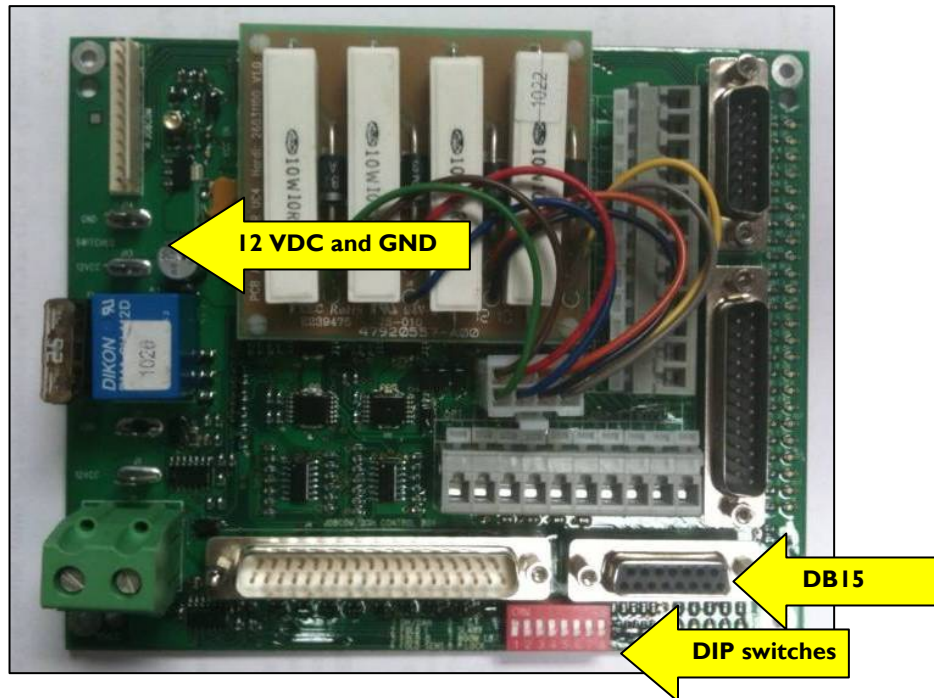


Figure 34: DAH09 PCB for AutoHeight

11. Configure the system for Autoslant by setting the DIP switches on DAH09 board:

a) Set DIP switches 2,3,4,6 and 8 to ON. Set DIP switch 5 and 7 to OFF (**Figure 35**).

b) If the sprayer uses a DAH valve block set DIP switch 1 to OFF. If the sprayer uses a DH valve block set DIP switch 1 to ON. See **Figure 36**.

12. Close the electronics enclosure. Gather up excess cable (C11 & C02) and neatly cable-tie to the machine.

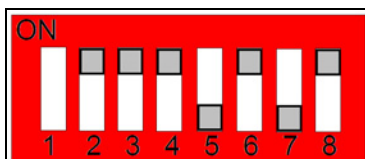


Figure 35: Suggested Default Setting for DIP Switches 2-8 for AUTOSLANT

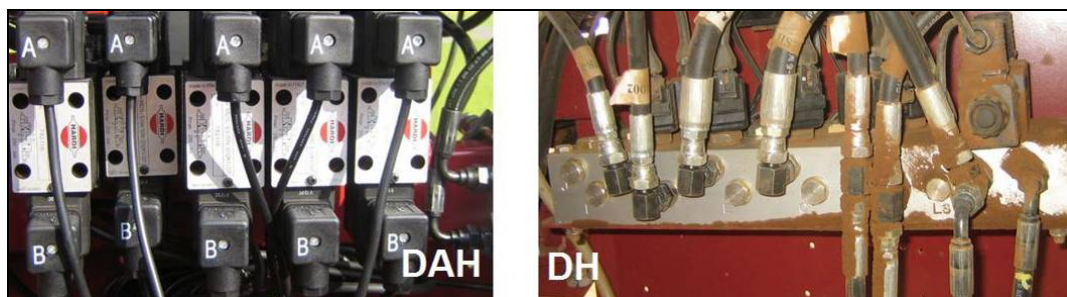


Figure 36: HARDI DAH (DIP 1 OFF) vs. DH Block (DIP 1 ON)

Notice:

Additional instructions are available in the UC4+BC+HD4-INSTE (End-user manual) for configuring spray ON/OFF signal sensing and headland modes. With these features the Autoslant system will function together with the spray signal, switching boom height control on and off with the spray signal. This function can also be configured to raise the boom automatically for headland turning. Refer to the HD4 end-user manual for more information. These additional features described are only available when using the HARDI DAH09 PCB. This is only applicable for systems using the DAH09 interface and with harness 44658-78.

! Note that on some sprayers the slant valve wiring varies from machine to machine. This applies to all machines.

- If the left-hand tip lifts when you press the left button, and the right-hand button lifts the right hand tip (as shown in **Figure 37**), the wiring as described above is correct.

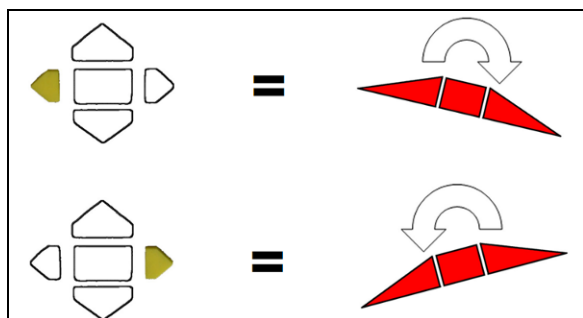


Figure 37: Default Slant Direction Wiring

- However, if the boom does the opposite of what is described above, it is necessary to swap the **E** and **F** wires in the S6 connector of 44658-78 (C12) or 44658-51 (C12A).

4.11 NORAC VALVE AND SENSOR CONNECTIONS

1. Route the 6-pin shroud (**S6**) and 4-pin AMP plug (**P4**) on C11 to the rear of the sprayer near the sprayer valve block.
2. Connect the 6-pin tower on the valve cable (**C03**) to the mating 6-pin shroud (**S6**) on C11 (**Figure 29**).
3. Install the 2-pin connectors from C03 onto each NORAC valve as shown in **Figure 38**.
4. The connectors on the valve cable (**C03**) are marked **RIGHT UP**, **LEFT UP**, **RIGHT DOWN** and **LEFT DOWN**. Cables labeled with **UP** go on the same side as the hydraulic hoses.

6. Connect the roll sensors (**E03 & E04**) to the 4-pin AMP connectors on cable C02A.

! For details on mounting the **UC4 Control Panel (Item E01)** and necessary electrical connections inside the cab, refer to the **UC4-BC-HD4E End-User** document.

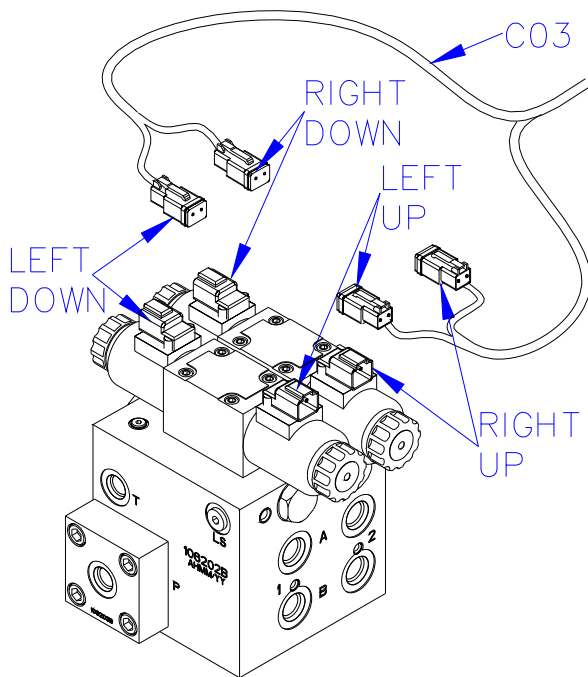


Figure 38: Valve Cable Connections

5. Connect the sensors (**E02**) to the 4-pin AMP connectors on cable C02.

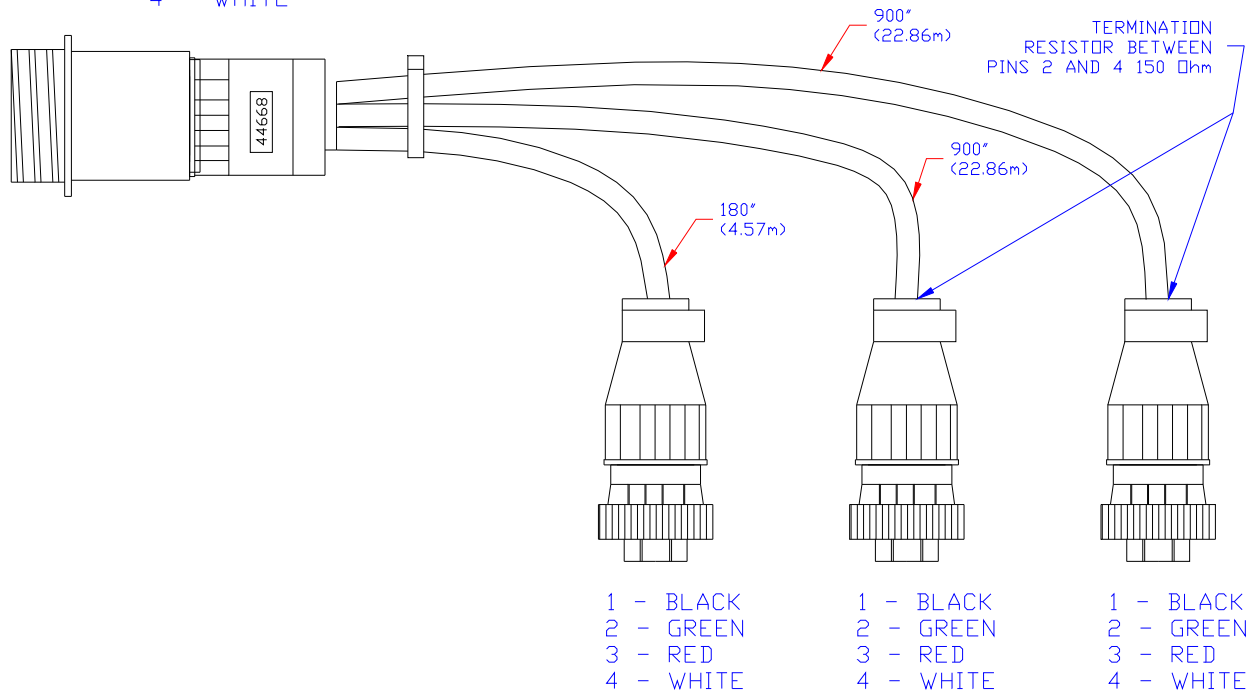
5 COMPLETING THE FACTORY INSTALLATION

1. Test the functionality of the original manufacturer's boom controls. Power to the NORAC control panel does not need to be on for the sprayer controls to function. Unfold the booms and raise/lower each boom and main section. If one or more of these functions do not work, review the hydraulic and electrical portions of this manual to check for proper installation.
2. Confirm that the cabling/hoses are at agreeable lengths for the entire range of motion.
3. Prepare the spray boom for the software installation.
 - Unfold the booms and level to 90 cm (or 35 inch) nozzle height. Ensure the boom slant is in its centered position.
 - At this point ensure the UC4+ sensors are reading from an adequate and uniform target, such as gravel or dirt. Do not attempt to perform the installation over grass or crop.
 - If the installation is done over concrete, place carpet beneath the sensors to avoid sensor problems during the installation.
4. Switch on the UC4+ control panel and find the **HD4** sprayer type by toggling through the sprayer list using the +/- switch. For a 32 – 36m HAZ boom, select the **HD6** sprayer type. At this point two install options are available:
 - a. Complete Install- this will setup the entire Autoheight system, requiring fully range of boom moment. Hydraulics will be calibrated to the hydraulic power unit connected. To perform a complete install press “Yes” and follow the on screen instructions.
 - b. Quick Install- this will require the boom to be unfolded at 90cm spray height but no hydraulic movement will occur (hydraulic calibration will occur at a later time by performing a “Retune” on the final hydraulic power unit. To perform a Quick Install, press and hold the “Yes” switch until “SENSOR” appears on the screen and release. Follow the on screen instructions.
5. For more information on performing the software setup and calibration refer to the UC4+ Operators Manual.

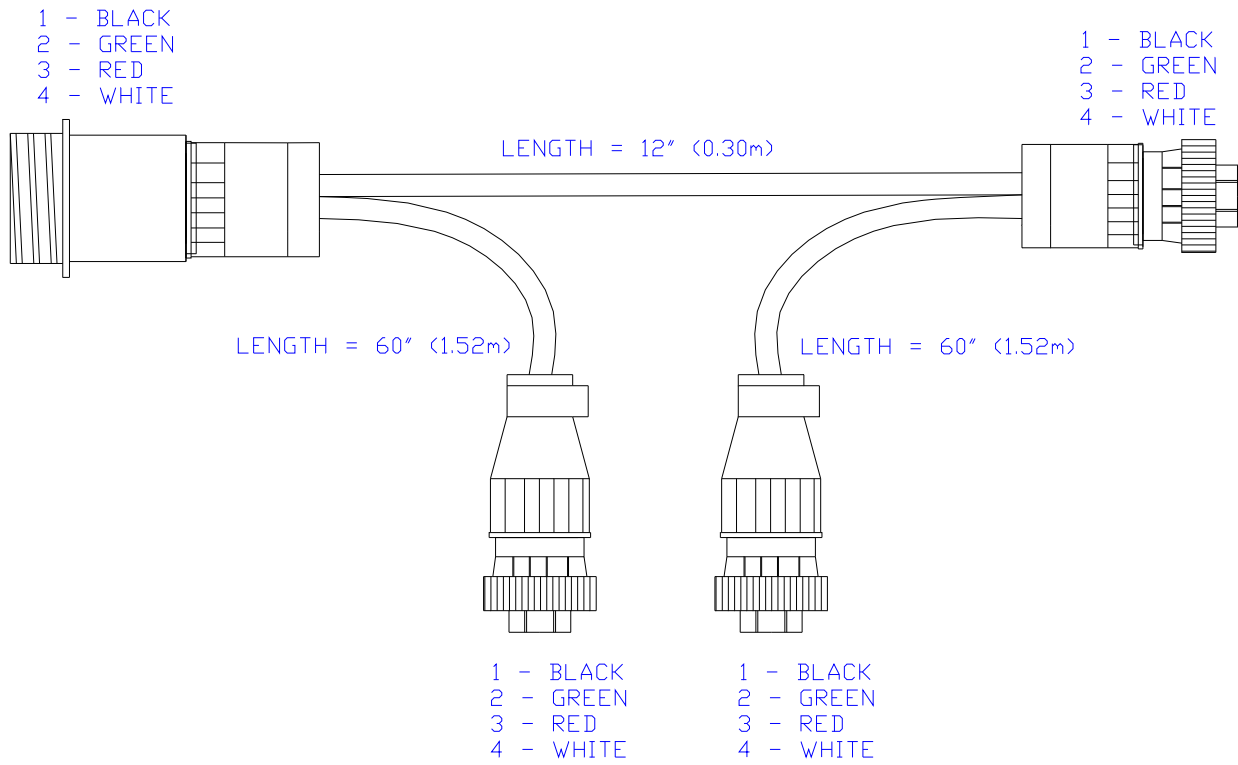
6 ELECTRICAL REFERENCE – CABLE DRAWINGS

6.1 ITEM C02: 44668 – CABLE SENSOR BRANCH

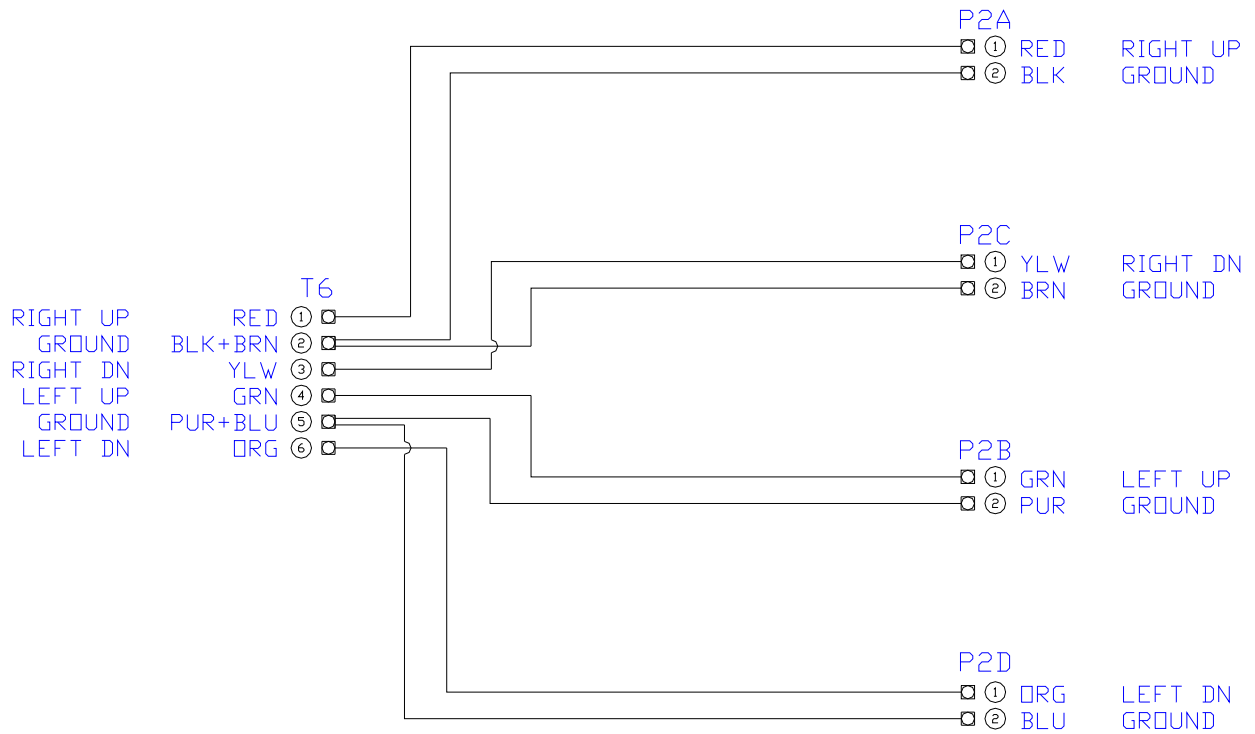
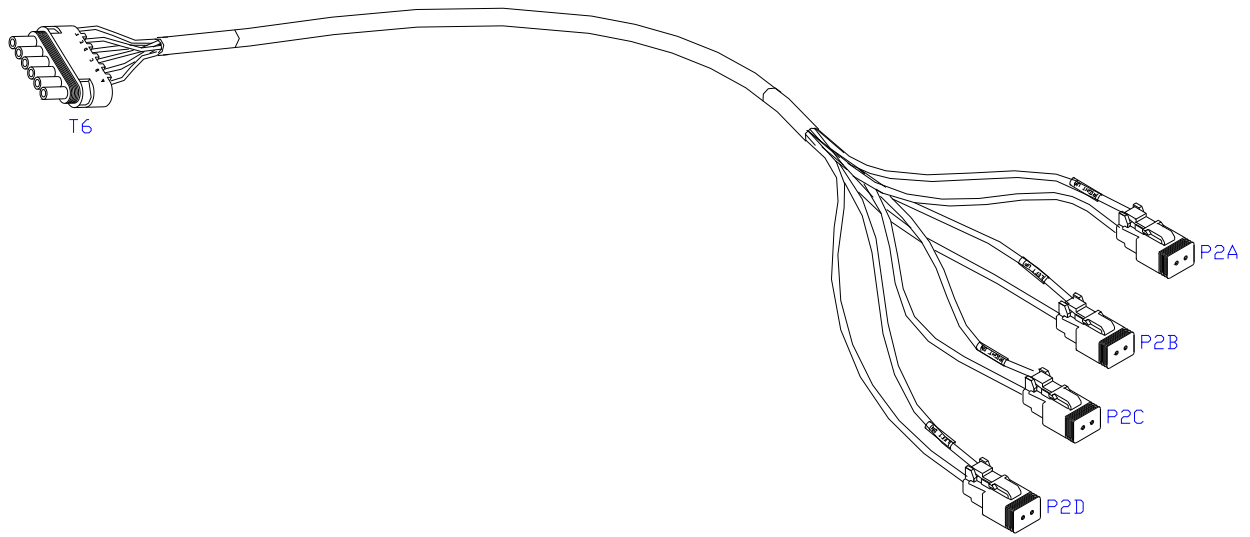
- 1 - BLACK
- 2 - GREEN
- 3 - RED
- 4 - WHITE



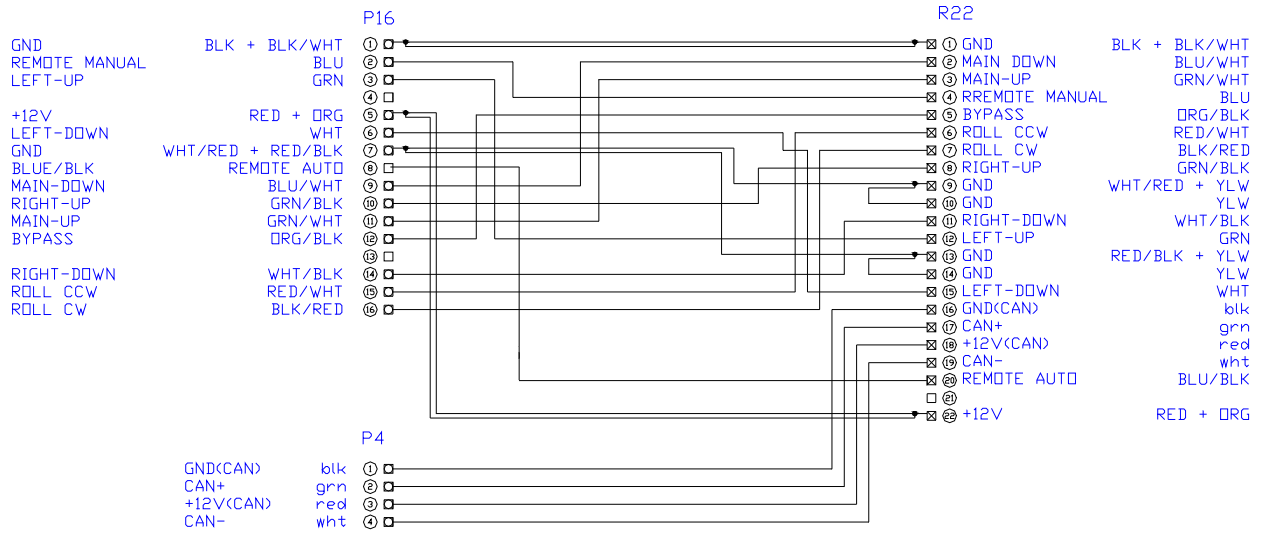
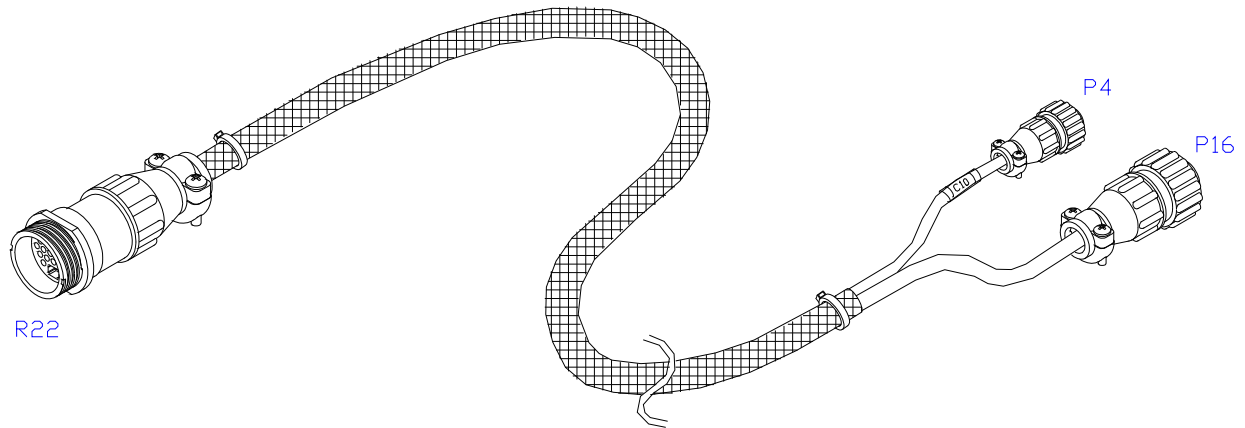
6.2 ITEM C02B: 44664 – CABLE UC4 CAN NODE DUAL



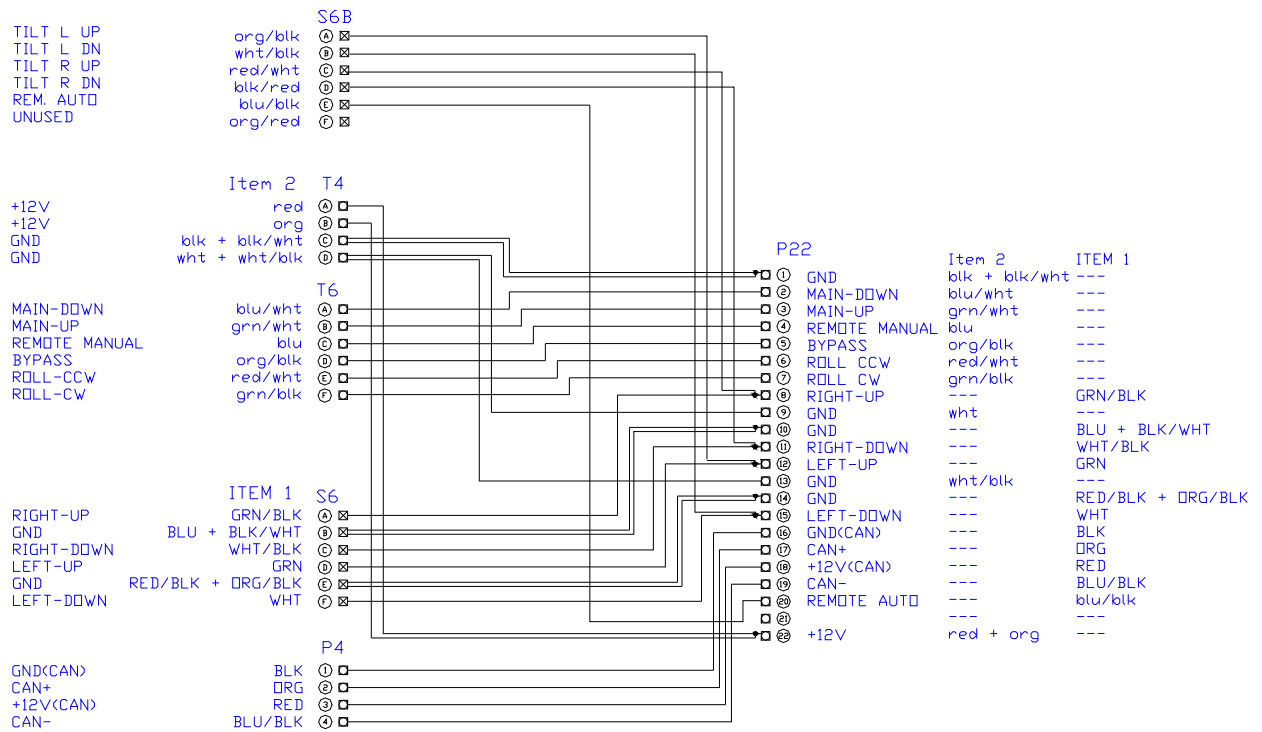
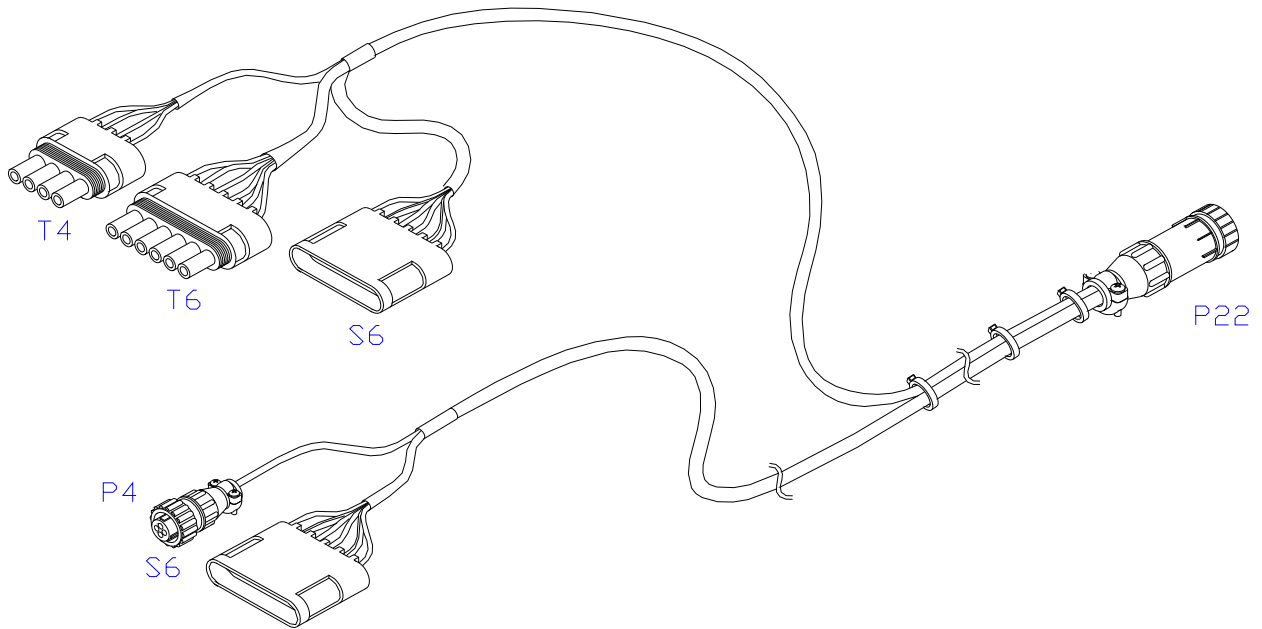
6.3 ITEM C3: 44656D – CABLE VALVE VARIABLE RATE DT



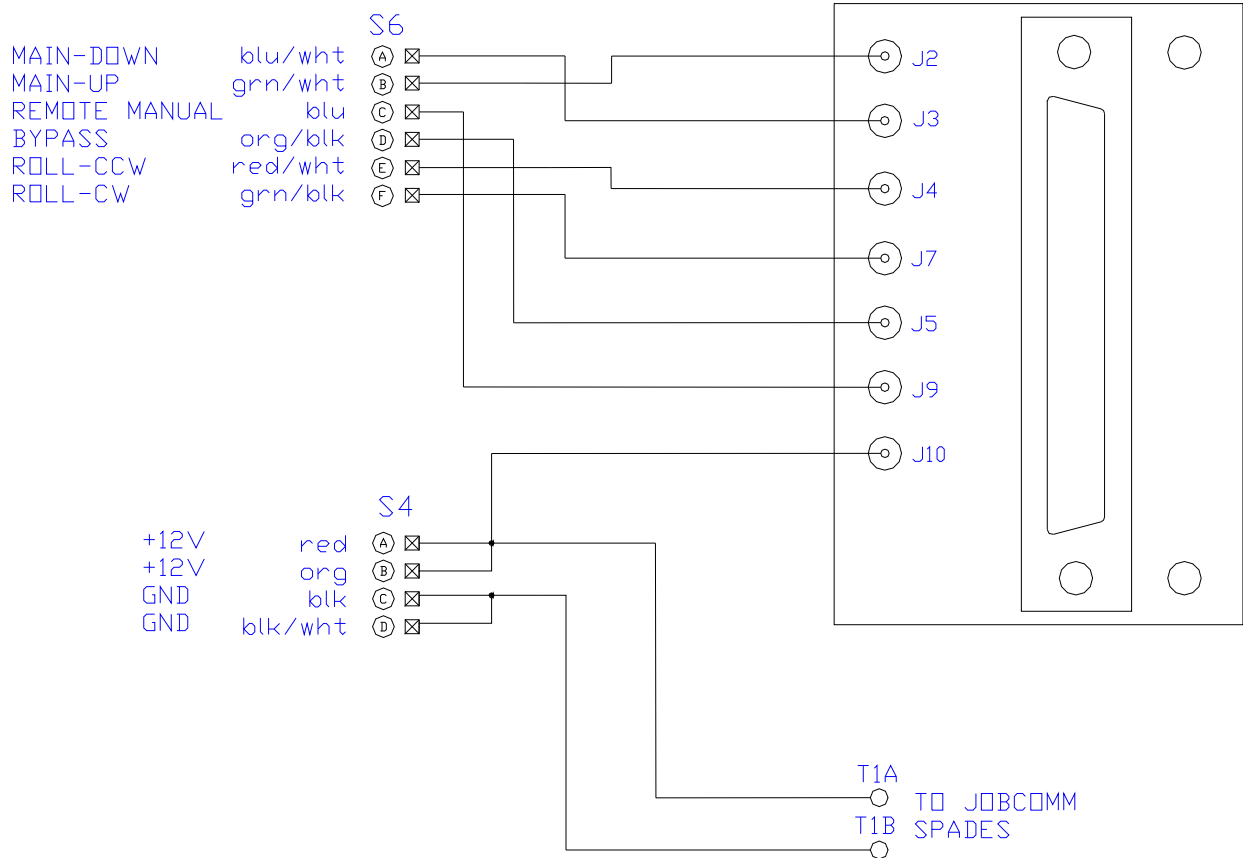
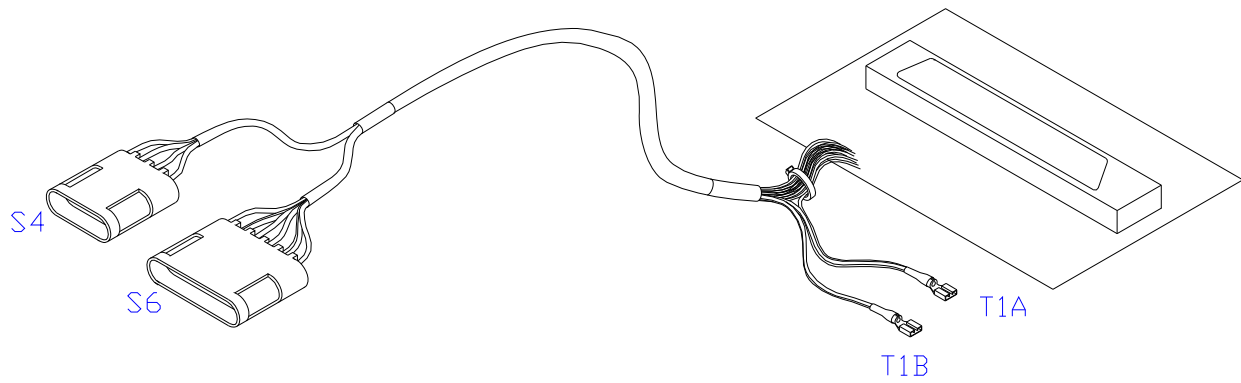
6.4 ITEM C10: 44658 -52 – CABLE UC4 POWER HARDI



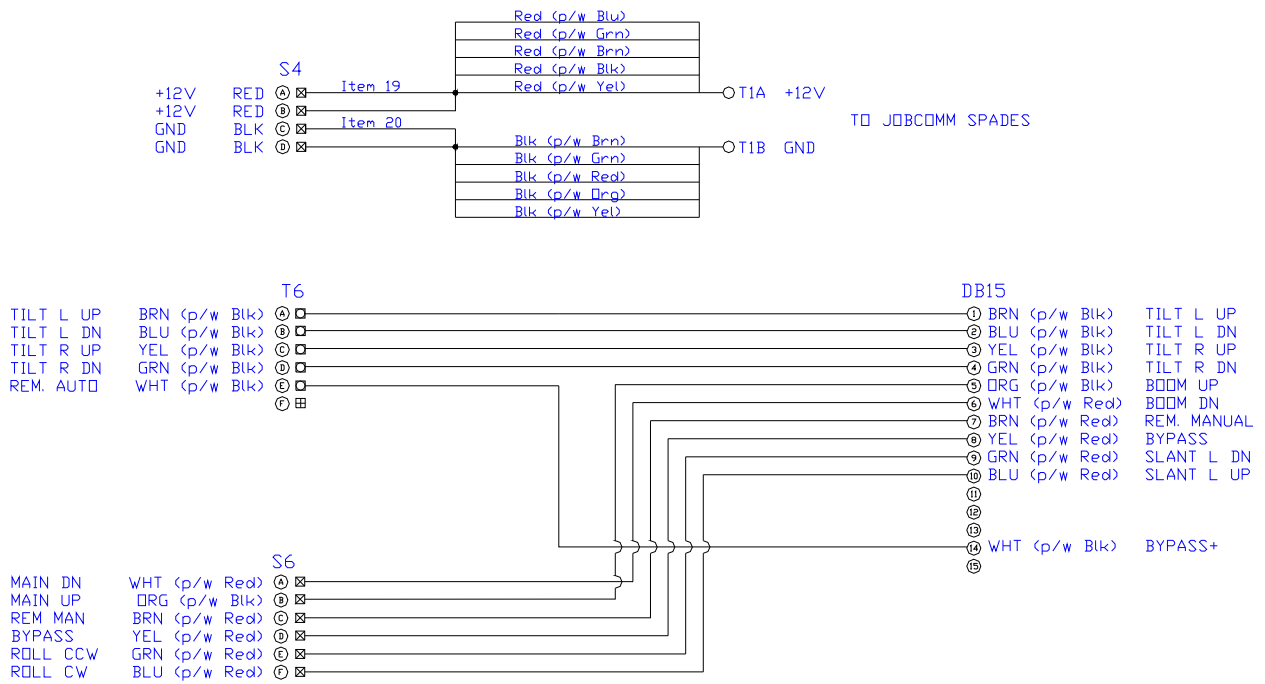
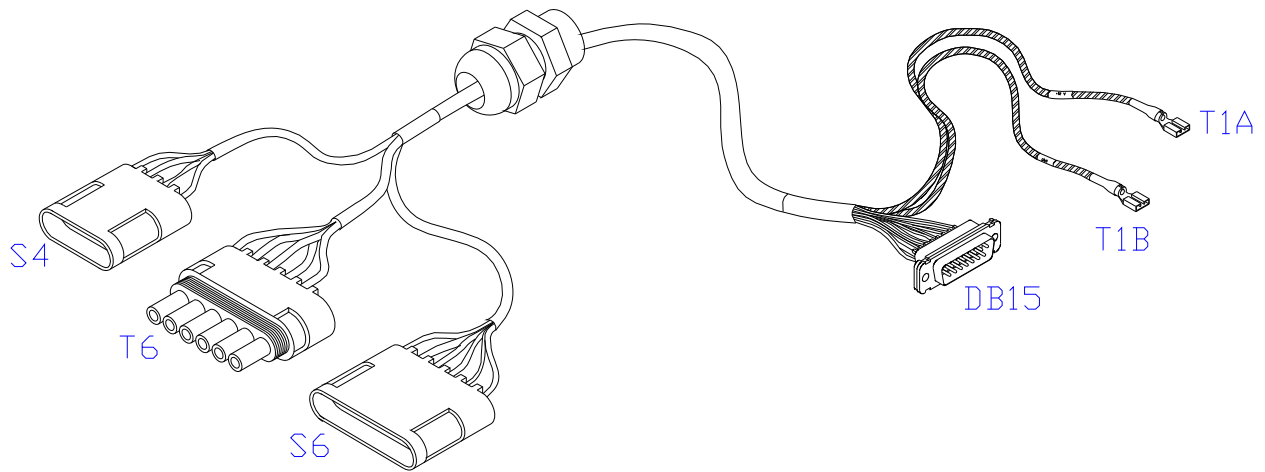
6.5 ITEM C11: 44658 -50 – CABLE UC4 INTERFACE EXTENSION HARDI



6.6 ITEM C12A: 44658 -51 – CABLE UC4 INTERFACE HARDI DAH



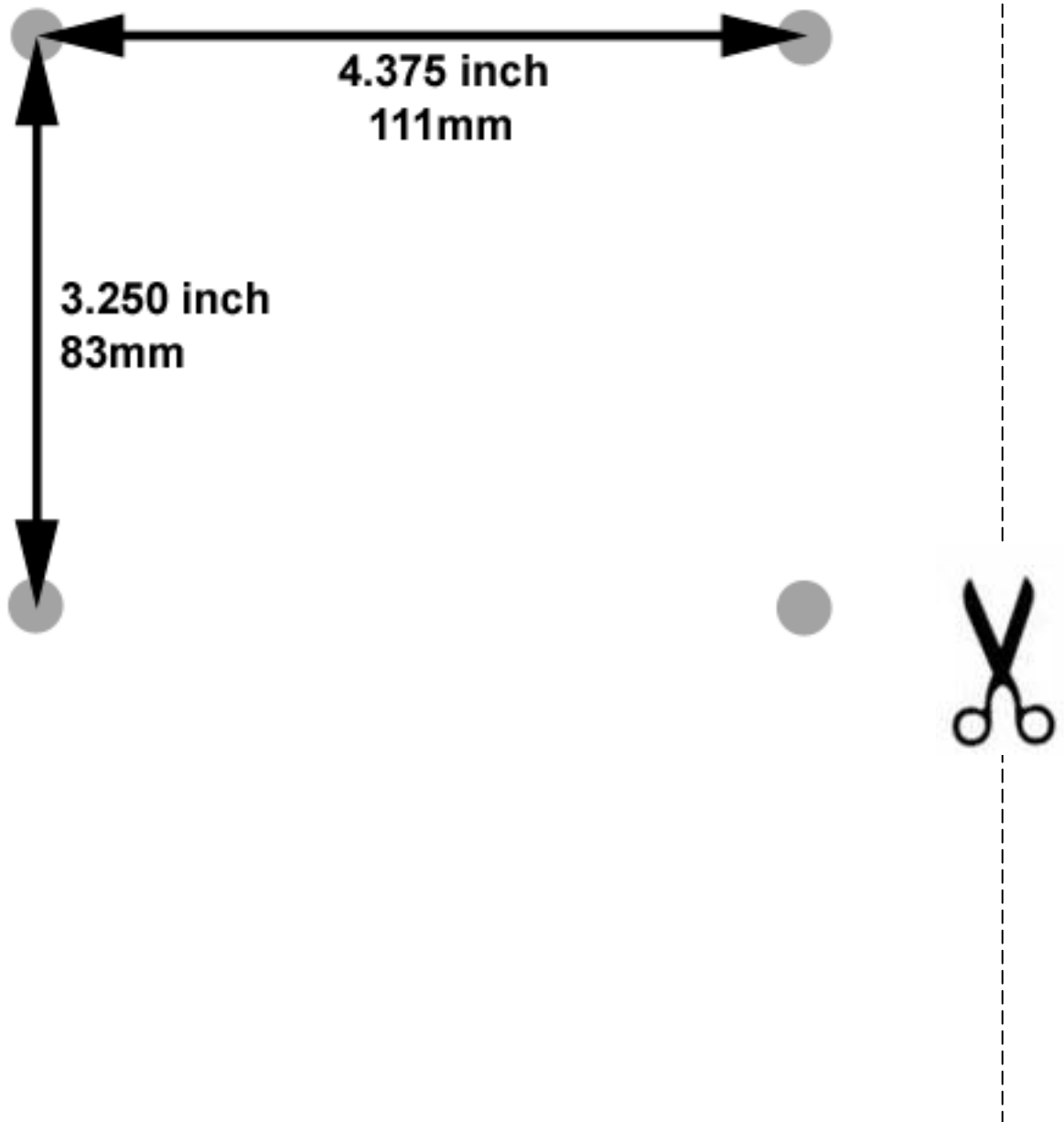
6.7 ITEM C12: 44658 -78 – CABLE UC4 INTERFACE HARDI DAH09



7 NORAC VALVE BLOCK STENCIL (ONLY FOR LPZ BOOM INSTALLS)

7.1 44963D

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